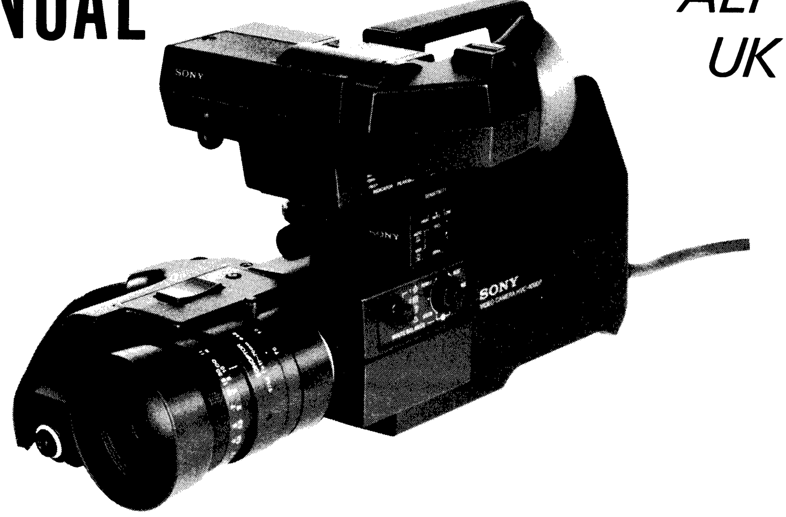
HVC-4000P
HVF-2000PA

SERVICE MANUAL

AEP Model
UK Model

D03



May, 1982

Also refer to Adjustment manual and Operation manual.

SPECIFICATIONS

System

Pickup tube	2/3-inch MF TRINICON tube
Signal system	CCIR standards, PAL colour
Scanning system	625 lines, 2 : 1 interlace
Frame	25 frames/sec
Sync system	internal (only)
Scanning frequency	Horizontal 15.625 kHz Vertical 50 Hz
Lens	Combined 6 × power zoom lens (f = 11 – 70 mm, F1.4) with macro Filter diameter : 58 mm
Colour temperature selector	Built-in 4-step filter (3200°K/4500°K/5800°K/7000°K)
Minimum illumination	35 lux (F1.4)
Illumination range	35 lux to 100,000 lux (3.5 to 10,000 footcandles), (automatic sensitivity and iris)
Recommended illumination	More than 300 lux
Horizontal resolution	300 lines
Video signal-to-noise ratio	45 dB

Input and output connector

VTR connector (Sony K type, 14-pin)	Video output 1.0 Vp-p, 75 ohms unblanced, sync negative Audio output −20 dBs (0 dBs = 0.775 Vrms) low impedance Video input 1.0 Vp-p, 75 ohms unbalanced sync negative Audio input −20 dBs
External miocrophone jack	Minijack −65 dBs for low impedance microphones
Earpiece connector	Minijack −26 dBs for 8 ohm earpiece

General

Power requirements	12 V dc
Power consumption	7.7 W (including viewfinder) 5.9 W (camera only)
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions	Approx. 225 × 200 × 351 mm (w/h/d) ($8\frac{7}{8}$ × $7\frac{7}{8}$ × $13\frac{7}{8}$ inches) (including zoom lens, viewfinder and grip) Approx. 158 × 190 × 351 mm (w/h/d) ($6\frac{1}{4}$ × $7\frac{1}{2}$ × $13\frac{7}{8}$ inches) (camera only)
Weight	Approx. 2.8 kg (6 lbs 3 oz) (including viewfinder, and not including camera cable) Approx. 2.3 kg (5 lbs 1 oz) (camera only)

Whilst the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

MF TRINICON
COLOUR VIDEO CAMERA

SONY®

MICROFILM

Consumer
VIDEO

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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HVF-2000PA (Electronic Viewfinder)

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SECTION 1
GENERAL

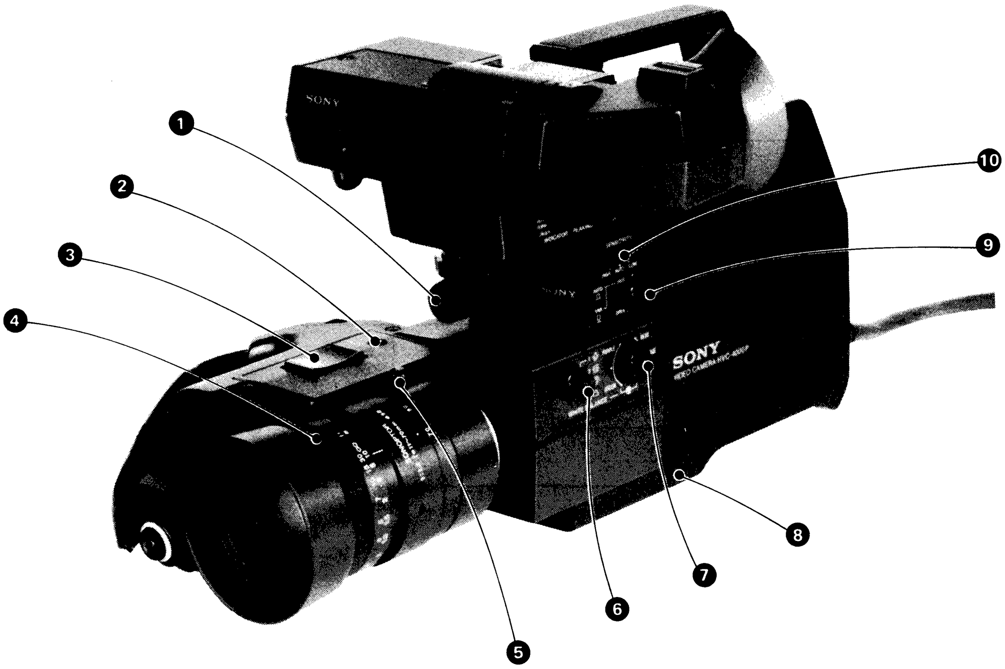
1-1. EASY TO USE VIDEO CAMERA

NOTICE

Some recorders may be unable to use all the functions of this camera. These functions are as follows. For details, see the appropriate sections of the manual.

Function / Recorder	TAPE RUN/ STOP button	Fader	REC REVIEW	Monitor the play-back picture on the viewfinder.	Listen to the playback sound on the earpiece
SL-F1E/F1UB, SL-C9E/C9UB	Yes	Yes	Yes	Yes	Yes
SL-3000E/3000UB SL-C7E/C7UB SL-C5E/C5UB	Yes	Yes	No	Yes	Yes
SL-C6E/C6UB	Yes	Yes	No	No.	No

1-2. LOCATION AND FUNCTION OF CONTROLS



❶ Built-in microphone
Sound recording is made while shooting in monaural.

❷ REC REVIEW button
When using a recorder with a REC review function, press this button to review the last few seconds of the recorded picture.

❸ Power ZOOM button
Press the button for smooth power zooming between wide-angle (W) and telephoto (T) positions.

❹ Focus ring
Turn the ring to focus.

❺ Manual zoom lever
Turn the zoom lever for manual zooming between the wide-angle and telephoto positions.
For close-ups, pull the lever out and turn the ring to the MACRO position.

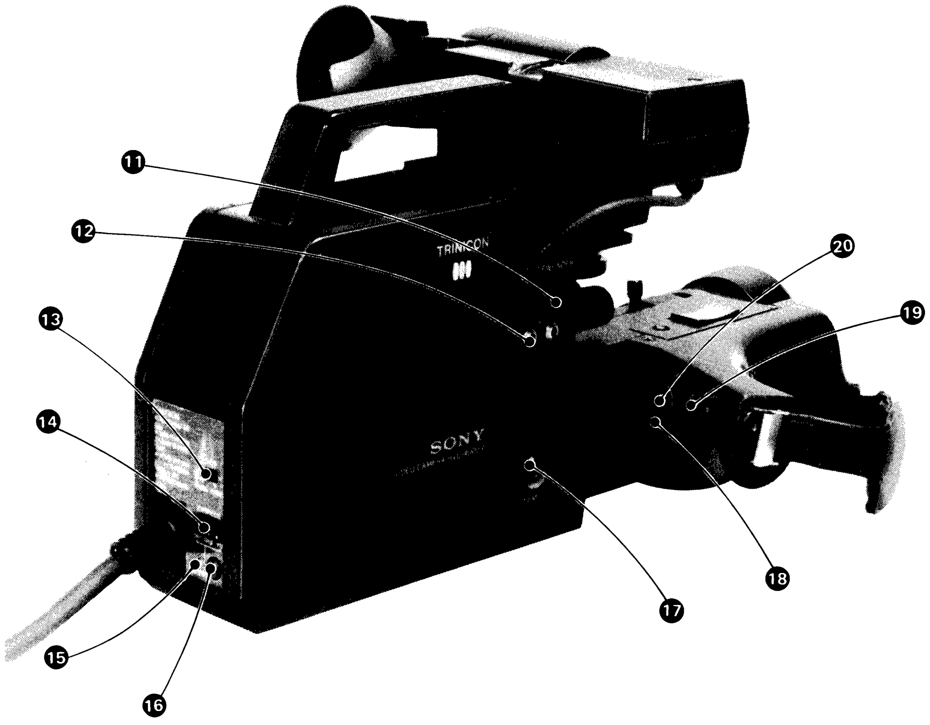
❻ WHITE BALANCE control
Select the control according to the prevailing light conditions.

❼ FINE tuning control
Turn the control to fine-tune the white balance.

❽ Tripod receptacle (1/4″ × 20)

❾ IRIS control
Auto (pushed-in): The iris is adjusted automatically by pushing in the control.
VAR (pulled-out): The iris is adjusted manually by turning the control.

❿ SENSITIVITY selector
Selects the sensitivity of the camera. Normally, set to AUTO.



⑪ VIEWFINDER connector
Connect the viewfinder cord here.

⑫ MIC jacks (minijack)
When using an external microphone, connect the microphone to this jack.
The built-in microphone will not operate when the microphone is connected to the MIC CH-1 jack.

⑬ VIDEO selector
Set the selector to REVERSE when using the negative and positive reversal function.
Except when special effects are required, or when projecting or recording a colour negative film, leave it in the NORMAL position.

⑭ EARPIECE switch
Selects the sound monitored by the earpiece.

⑮ SOUND indicator lamp
The lamp flashes when the microphone picks up sound.

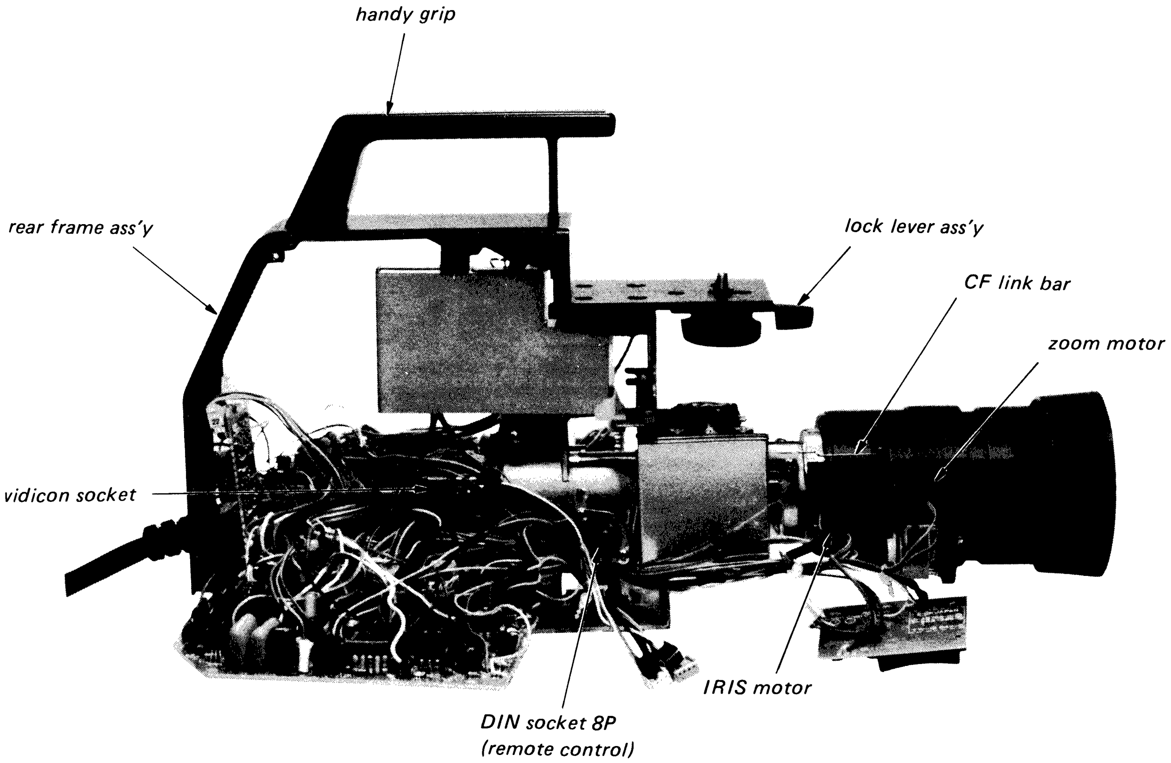
⑯ EARPIECE jack
Connect the earpiece to the connector when monitoring the sound being recorded or played back.

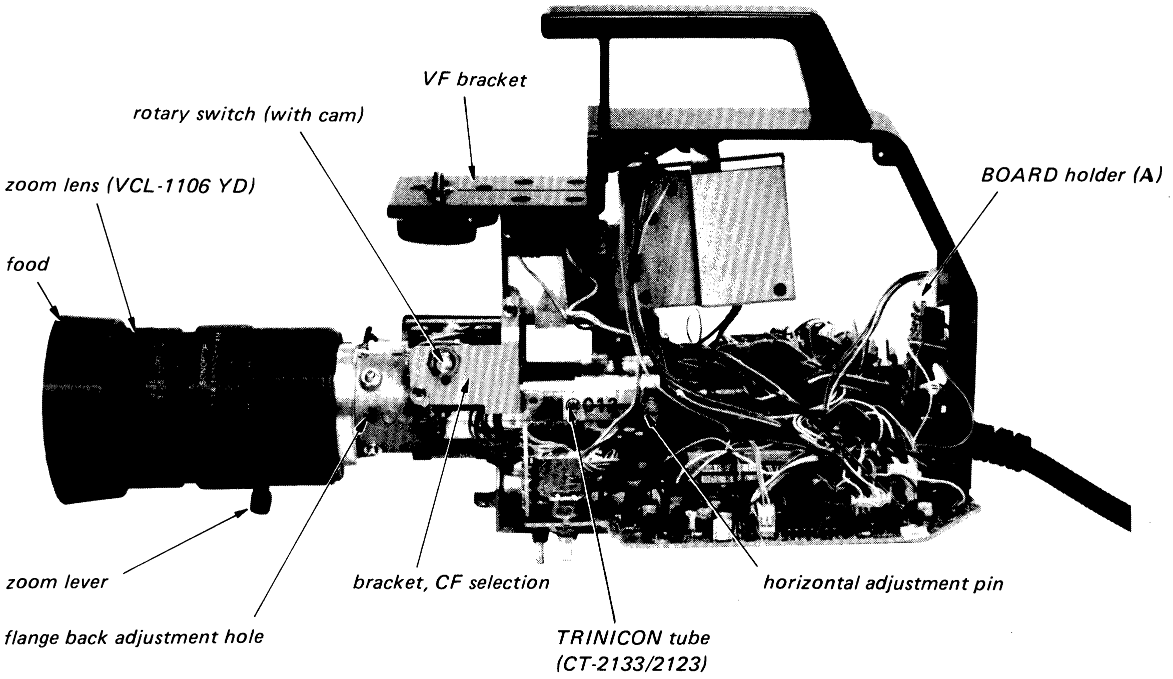
⑰ REMOTE control connector
Connect the HVR-4000 remote control unit (optional) to the connector for remote control operation.

⑱ LOCK switch (outer ring)
To prevent accidental pressing of the TAPE RUN/STOP button, set the button to the left position (LOCK).

⑲ FADER switch
Push the switch for fade-in and fade-out effects.
If pushed again, the fader function is cancelled.

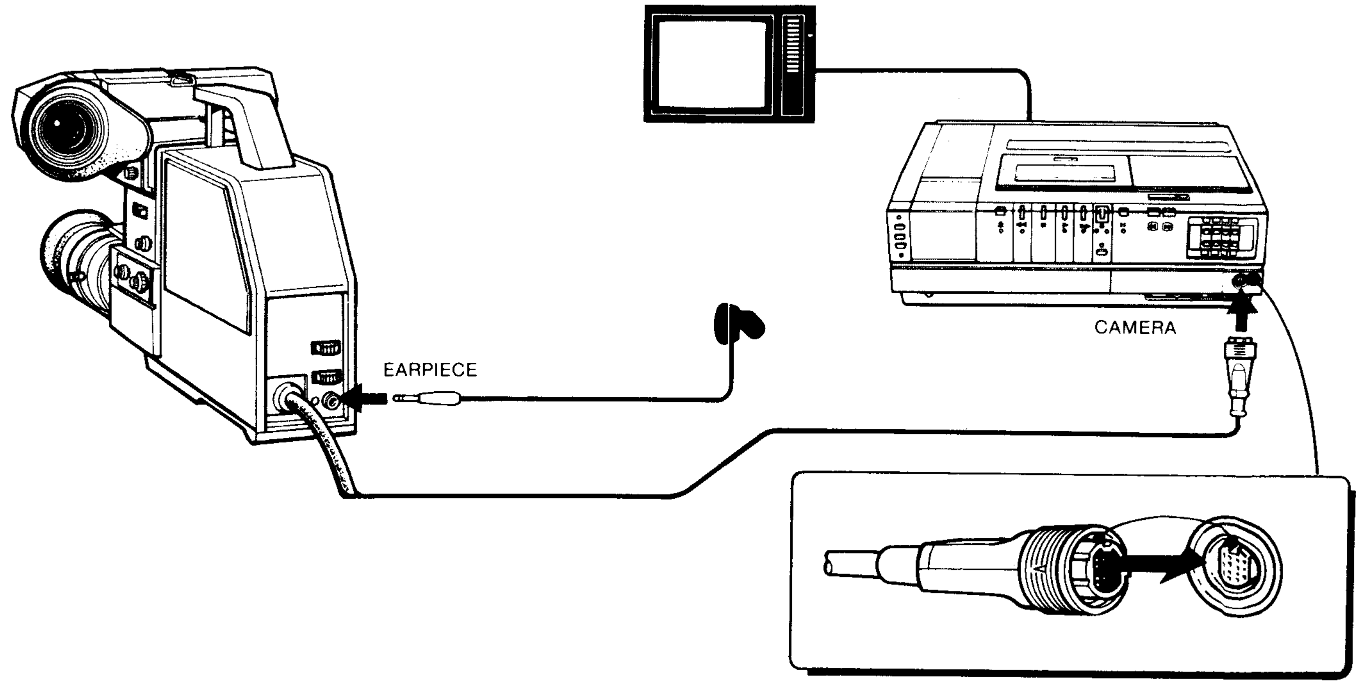
⑳ TAPE RUN/STOP button
Press the button to start or stop the tape in the video recorder


handy grip
rear frame ass'y
lock lever ass'y
CF link bar
zoom motor
vidicon socket
IRIS motor
DIN socket 8P
(remote control)


VF bracket
rotary switch (with cam)
zoom lens (VCL-1106 YD)
BOARD holder (A)
food
zoom lever
bracket, CF selection
horizontal adjustment pin
flange back adjustment hole
TRINICON tube
(CT-2133/2123)

1-3. CONNECTING THE RECORDER

CONNECTION WITH A RECORDER HAVING A SONY K-TYPE (14-PIN) CAMERA CONNECTOR . . . Sony SL-C7UB, SL-C5UB



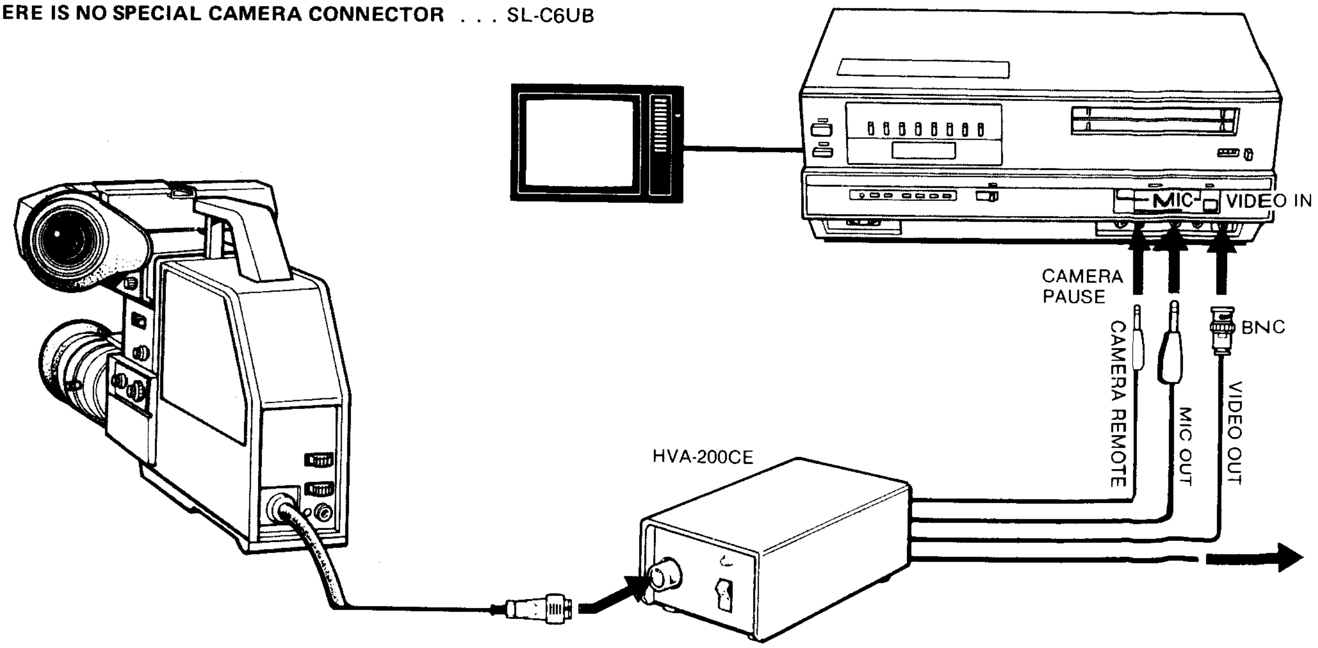
Align and insert the 14-pin connector of the camera to the camera connector of the recorder. Power will be supplied from the recorder. The camera cable can be extended up to 10 meters by adding CCK-5 (5 m,15 feet) or CCK-10 (10 m, 33 feet) extension cables (optional).

Handle the camera cable carefully.
Be carefull not to pull or bend the cable as this may cause internal breaks.

To watch the picture being recorded on TV
Connect a TV to the recorder.

To monitor the sound being recorded
Connect a supplied earpiece to the EARPIECE jack.

WHEN THERE IS NO SPECIAL CAMERA CONNECTOR . . . SL-C6UB



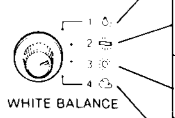
An optional ac adaptor HVA-200CE is required to connect the recorder.
Connect the MIC OUT cord of the ac adaptor to the MIC jack of the recorder, the VIDEO OUT cord to the VIDEO IN jack, and the CAMERA REMOTE cord to the CAMERA PAUSE jack.

In this connection, the playback picture cannot be monitored on the viewfinder screen. When the EARPIECE switch is set to VTR, the earpiece sound is switched off and the SOUND indicator lamp also does not operate.

1-4. CAMERA ADJUSTMENT

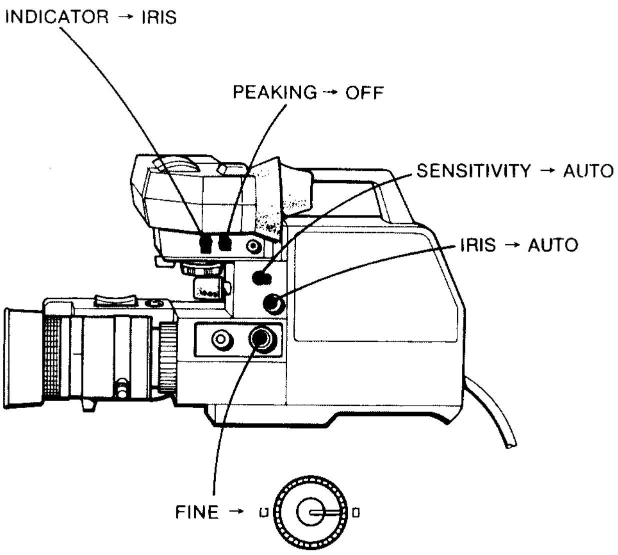
Refer to page 9 for manual adjustment or fine tuning.

The green dot of each switch and control is a standard setting position for camera adjustment. Set switches and controls to these green dots (indicated in the figure). The IRIS control and the SENSITIVITY selector are automatically adjusted and a good quality picture will be recorded.
Set the WHITE BALANCE control according to the prevailing light condition.



1 💡	Incandescent lamps or photo-flood lamps	
2 ▭	Fluorescent lamps	
3 ☀	Bright sunlight outdoors	For approximately 30 min. after sunrise or before sunset, the 💡 position will usually give better results.
4 ☁	Cloudy or rainy conditions	For approximately 30 min. after sunrise or before sunset, the ☀ position will usually give better results.

> Always set the WHITE BALANCE control to suit the prevailing light conditions. For instance, when shooting scenery out of doors through the window from inside a room, set the control appropriately for the outdoor light.



1-5. VIDEO OPERATION

Operating procedures vary with the recorder used.
For details, refer to the video cassette recorder operation manual.

When the camera is connected to a recorder with a K-type connector

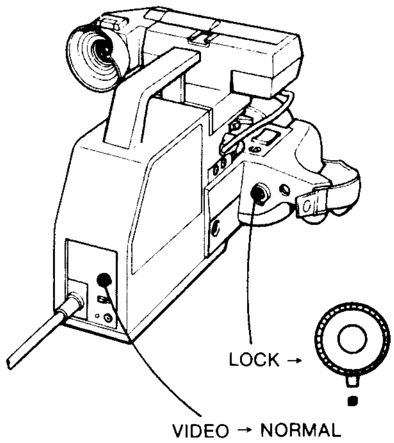
❶ Turn on the recorder and insert a video cassette.
❷ If there is an input selector on the recorder, set it to CAMERA.
To monitor the picture being recorded on television, set the VTR/TV selector to VTR.
❸ Press the PLAY button while pressing the REC button.
On some recorders, only the REC button needs to be pressed.

At this point, the video recorder enters the recording pause mode, and the preparation is complete.

When a camera using an ac adaptor is connected to the recorder

❶ Turn on the ac adaptor.
❷ Turn on the recorder and insert a video cassette.
❸ If there is an input selector on the recorder, set it to LINE.
To monitor the recorded picture on television, set the VTR/TV selector to VTR.
❹ Simultaneously press the PAUSE button and the REC button.

The video recorder enters the recording pause mode, and the preparation is complete.



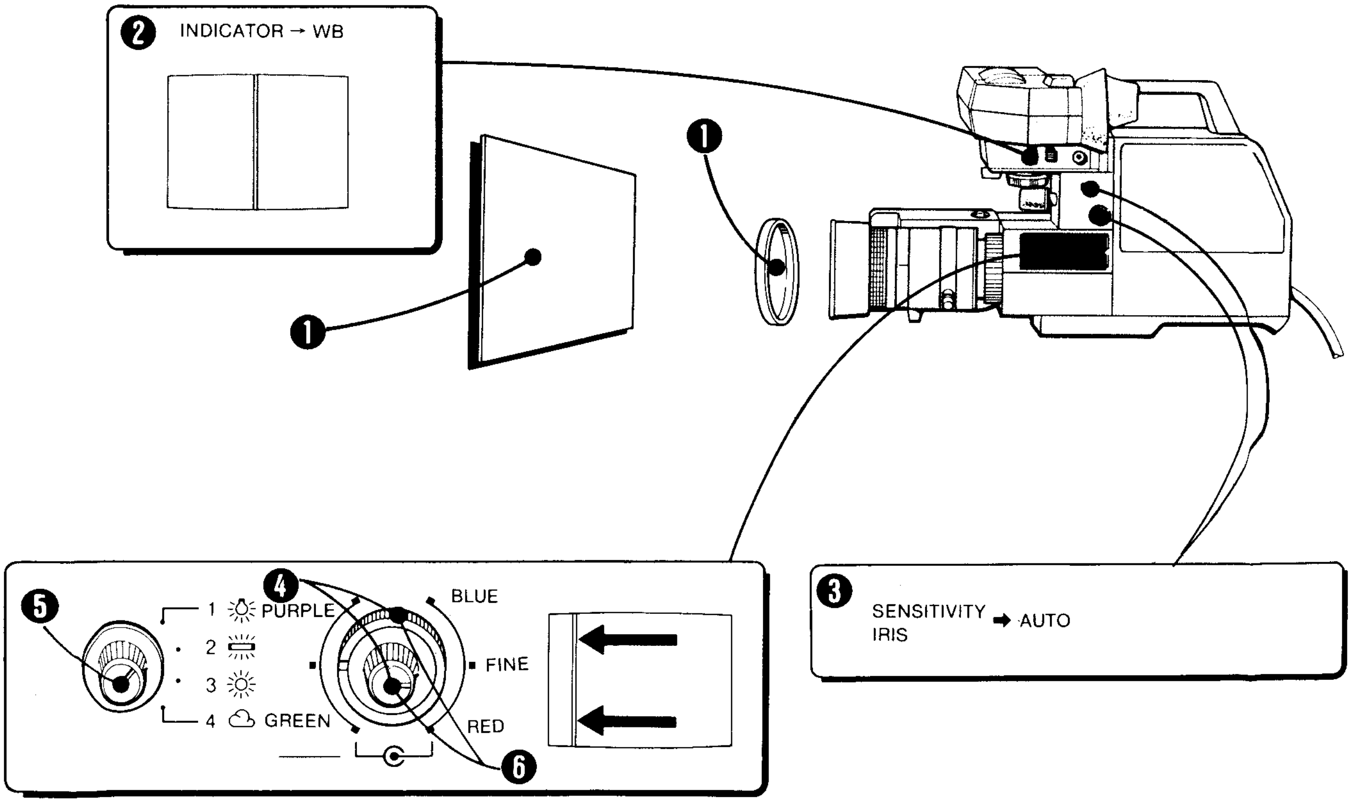
1-6. FINE TUNING THE CAMERA

Once you are used to the general operating procedures, better results will be obtained if you "fine tune" the camera. First, turn the recorder or the ac adaptor on and shoot a scene to get a picture on the viewfinder screen.

WHITE BALANCE ADJUSTMENT

The hue of the picture will vary according to the type of light illuminating the subject. Four steps of WHITE BALANCE control provide an overall adjustment, while more precise adjustment is provided by the FINE tuning controls. Two methods of fine-tuning the hue are possible, and the one you use will depend on the equipment you have available at the time.

PROCEDURE 1 When a colour TV is not available
Adjust so that a white subject (a white wall, a sheet of white paper, etc.) fills the field of view on the viewfinder screen. If a white subject is not available, use the lens cap (supplied).



❶ Using a white wall or paper
Adjust the zoom lever so that the white subject fills the field of view on the viewfinder screen.

Using the lens cap
Point the camera with the lens cap in position towards the light source. Be very careful not to drop the lens cap as direct lighting may damage parts inside the camera.

❷ Set the INDICATOR selector to WB.

❸ Set the SENSITIVITY and IRIS controls to AUTO (green mark).

❹ Set the FINE tuning controls to the center position (green mark).

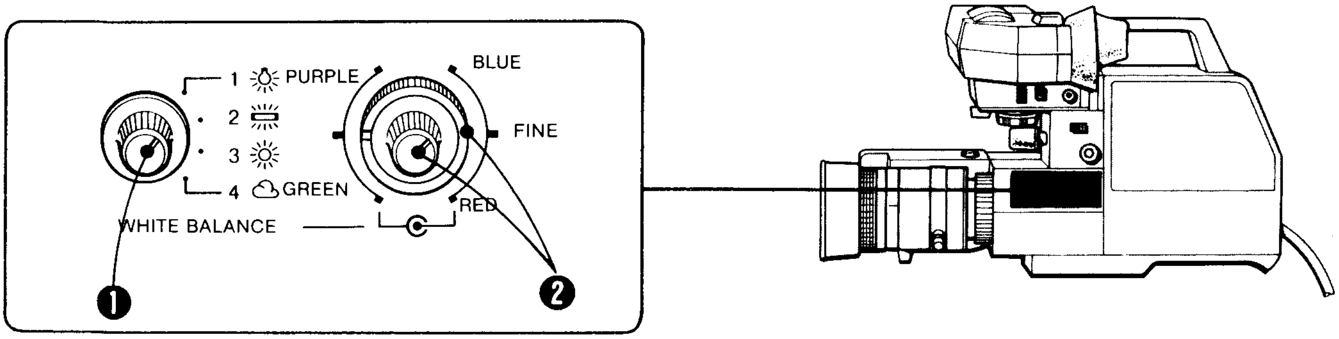
❺ Set the WHITE BALANCE control to the position in which the white line on the viewfinder screen moves as far to the left as possible.

❻ Turn the FINE tuning controls alternately and move the white line on the viewfinder screen as far to the left as possible.

If the white line on the viewfinder screen does not move, check to see if the yellow lamp in the viewfinder is on. If it is, it means that the light is insufficient.
Increase the illumination and try the adjustment again. If this is not possible, set the FINE tuning controls to the green mark (center position).

PROCEDURE 2 Using a colour TV or monitor

Adjust the picture on the TV or monitor screen for a natural colour tone. It is important to adjust the white balance for natural skin tone.



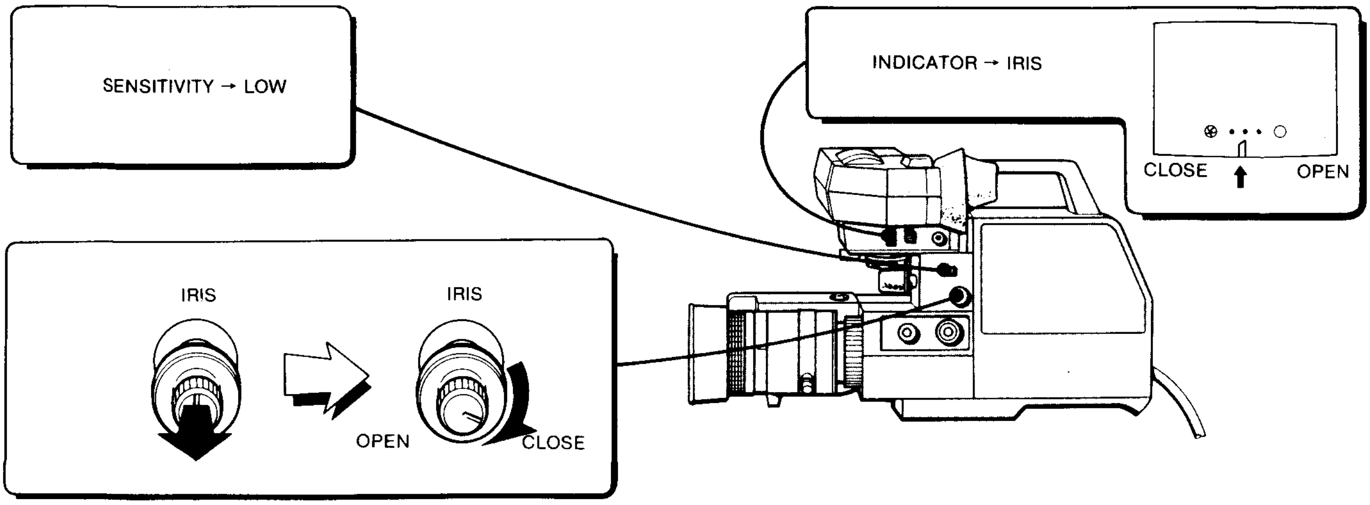
❶ Select the position of the WHITE BALANCE control according to the light illuminating the subject.
❷ Turn the outer and inner FINE tuning controls alternately for natural colour tone.

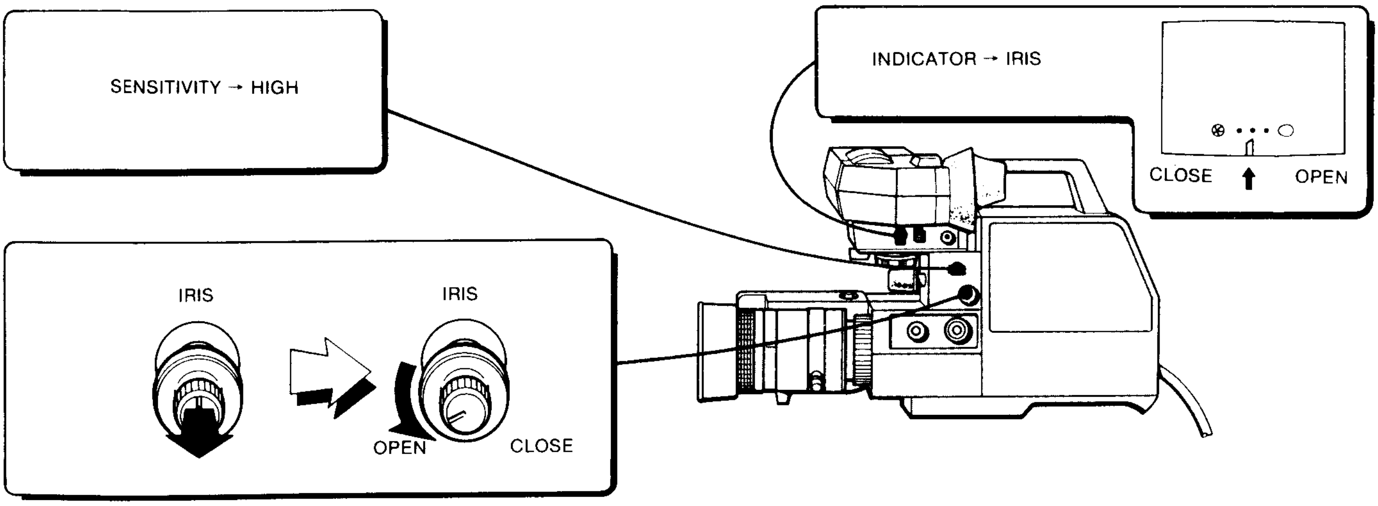
The colour tone also is considerably affected by the COLOUR control of the colour TV. Adjust the controls on TV correctly in advance.

SENSITIVITY SELECTOR

Normally, set the SENSITIVITY selector to AUTO. The Automatic Gain Control (AGC) circuit gives optimum brightness to the picture on the screen. If the IRIS control is set to VAR, and this selector is used at the same time, IRIS adjustment will give better results. For details see "IRIS adjustment".

IRIS ADJUSTMENT





Normally, set the IRIS control to AUTO. The automatic iris control circuit adjusts the iris according to the brightness on the scene. However, the subject may become too dark or out of focus because the iris is adjusted automatically according to the light.
For instance, when shooting a very contrasty scene such as the ones described below, adjust it with the iris set to VAR.

- When a backlit shot results in the person being too dark.
- When a shot made from a room results in a building outside being too bright or dazzling.
- When a contrasty scene results in outlines that are not sharp.

When the subject is too bright compared with the background

❶ Set the SENSITIVITY selector to LOW.
❷ Pull out the IRIS control and turn it toward CLOSE to adjust the "tone" of the subject.

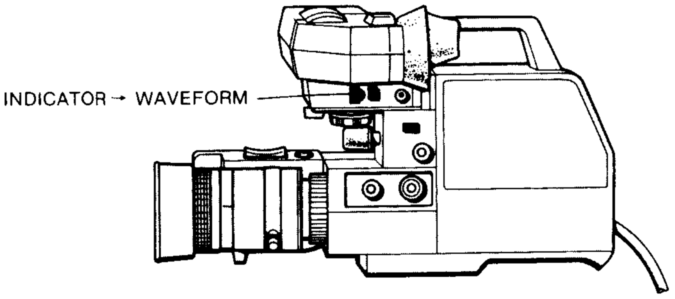
When the backgroud is too bright compared with the subject

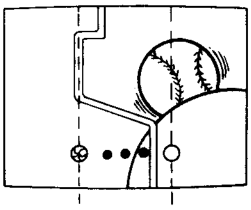
❶ Set the SENSITIVITY selector to HIGH.
❷ Pull out the IRIS control and turn it toward OPEN to adjust the "tone" of the subject.

Iris indication in the viewfinder
Set the INDICATOR selector to IRIS. The white indicator in the viewfinder indicates the approximate position of the iris.

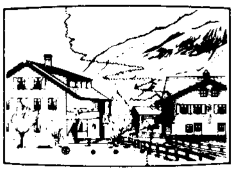
When setting the SENSITIVITY selector to HIGH, the picture on the screen may be a little unclear or lacking in definition.

FOCUSING

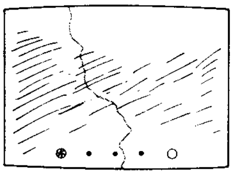




①



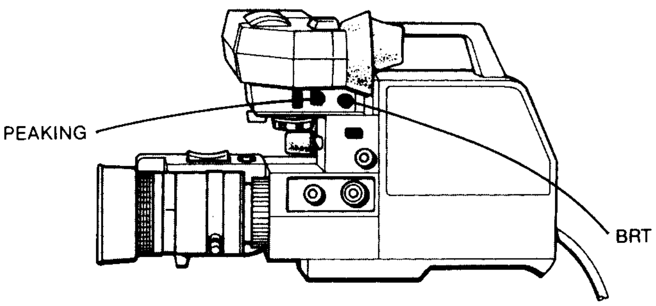
②



Normally move the zoom ring to the telephoto position to adjust the focus correctly. Thus, even if the picture size on the screen is zoomed, it will not go out of focus. The waveform indication of the viewfinder can also be used to check the focusing.
Set the INDICATOR selector to WAVEFORM.
In focus, the waveform appears jagged (①), while out of focus, the waveform appears smooth(②).

Viewfinder waveform indication
Indicates the approximate level of the output signal of the camera. The white indicator moves to the left in bright condition and to the right in dark condition.

VIEWFINDER PICTURE ADJUSTMENT

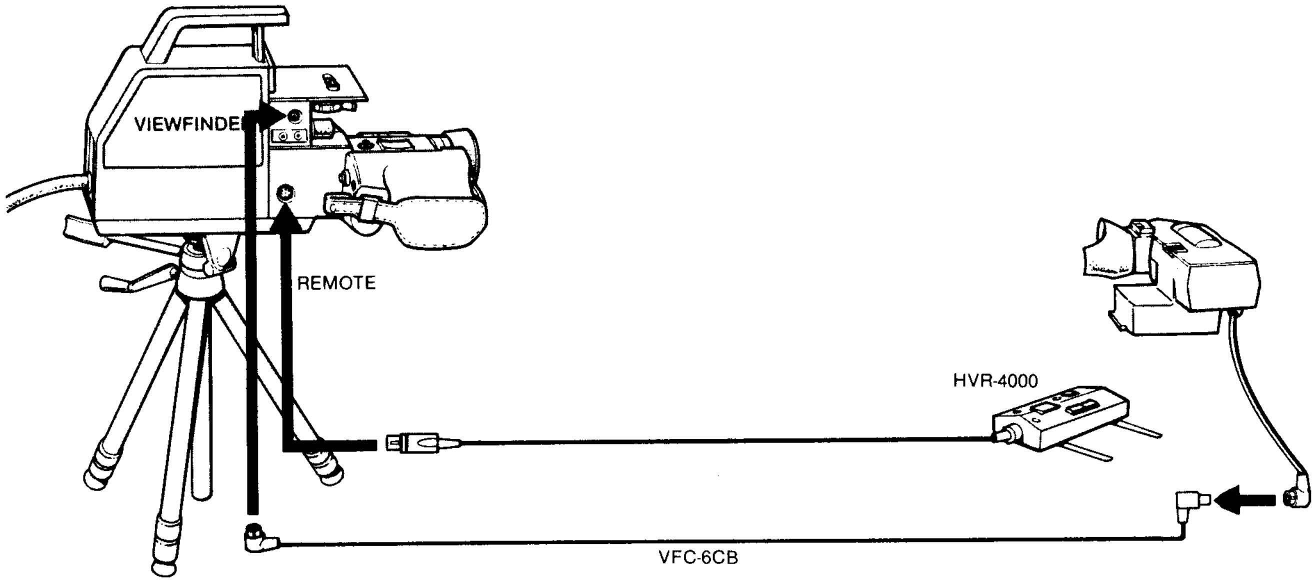


BRT control
Adjusts the brightness of the picture on the viewfinder.

PEAKING switch
Normally, set the switch OFF. Set the switch ON when you want to sharpen the contour (outline) of the picture.
When this switch is ON, the picture will remain on the viewfinder screen during fade-in and fade-out. Use it when you want to monitor the picture on the viewfinder during fader operation. Set the switch OFF when checking the fader effect.

> These controls only adjust the picture on the viewfinder screen and do not affect the picture being recorded.

1-7. REMOTE CONTROL OPERATION

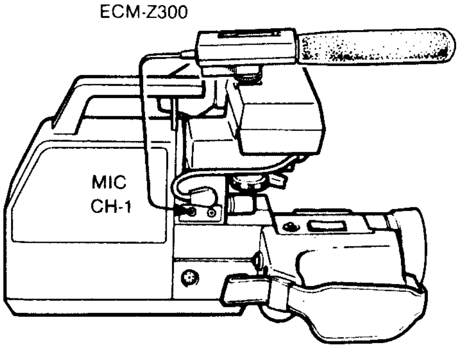


By using the optional HVR-4000 remote control unit, the camera may be operated from a distance. Remote control is ideal for wildlife "photograhy" and other situations where it is impractical or dangerous for the human oprator to get too close to the "action".

Connection
Connect the HVR-4000 remote control unit to the REMOTE control connector of the camera. By using the optional VFC-6CB viewfinder extension cable (6 meters, 19 feet), you can use the viewfinder in a convenient location.

Operation
The convenient functions such as TAPE RUN/STOP, ZOOM and FADER are provided with the HVR-4000. For details, refer to its manual.

1-8. USING AN EXTERNAL MICROHONE



Normally, sound can be picked up by the built-in microphone of the camera. Use an external microphone in the following cases.

Stereo recording (by using a video cassette recorder for stereo recording)
With the built-in microphone, recording is done in monaural.
For stereo recording, one-point stereo microphone such as the Sony ECM-949T or ECM-969 is convenient.

Directional sound recording
The built-in microphone is omni-directional and picks up sound from all directions equally. Use a uni-directional microphone such as the Sony ECM-Z300 (zoom microphone), ECM-31HVC or ECM-220T for "pin-pointing" specific sounds. The ECM-Z300 and ECM-31HVC can be attached to the accessory shoe of the viewfinder.

- If the microphone is connected to the MIC CH-1 jack, the built-in microphone is automatically disconnected.
- When using external microphones other than the ECM-Z300 and ECM-31HVC, do not attach to the accessory shoe of the viewfinder as noise may be picked up.

NOTES ON CONNECTING AN EXTERNAL MICROPHONE

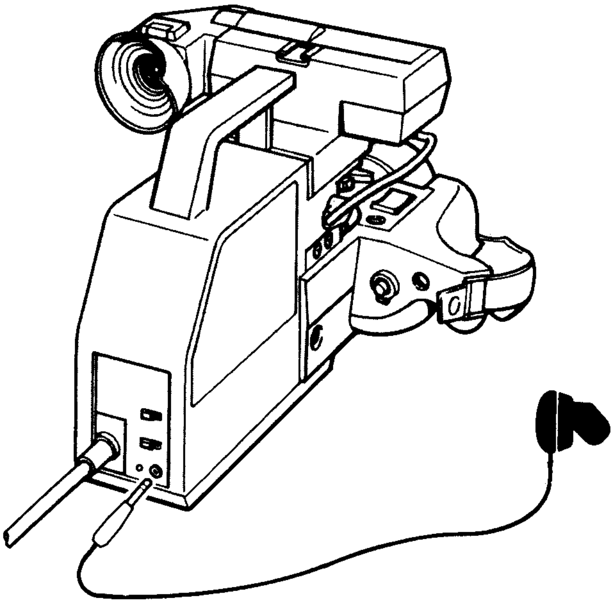
When using a video cassette recorder for monaural recording
(SL-3000UB, SL-C5UB, SL-C6UB, SL-C7UB)
Be sure to connect an external microphone to the CH-1 jack.
The built-in microphone is disconnected and recording is done through the external microphone.
If you connect an external microphone to the CH-2 jack, recording is done only from the built-in microphone (with SL-F1 series, the mixed sound from the built-in and external microphones is recorded. If you connect external microphones to the CH-1 and CH-2 jacks, the mixed sound from both jacks is also recorded with SL-F1 series.)

When using a video cassette recorder for stereo recording
- If you connect an external microphone only to the CH-1 jack, the sound is recorded on both right and left channels.
- If you connect an external microphone only to the CH-2 jack, the sound from the external microphone is recorded on the right channel and the sound from the built-in microphone is recorded on the left channel.
- If you connect external microphones to the CH-1 and CH-2 jacks, the sound from each microphone is recorded on the corresponding channel.

1-9. TO MONITOR THE SOUND BEING RECORDED — using an earpiece

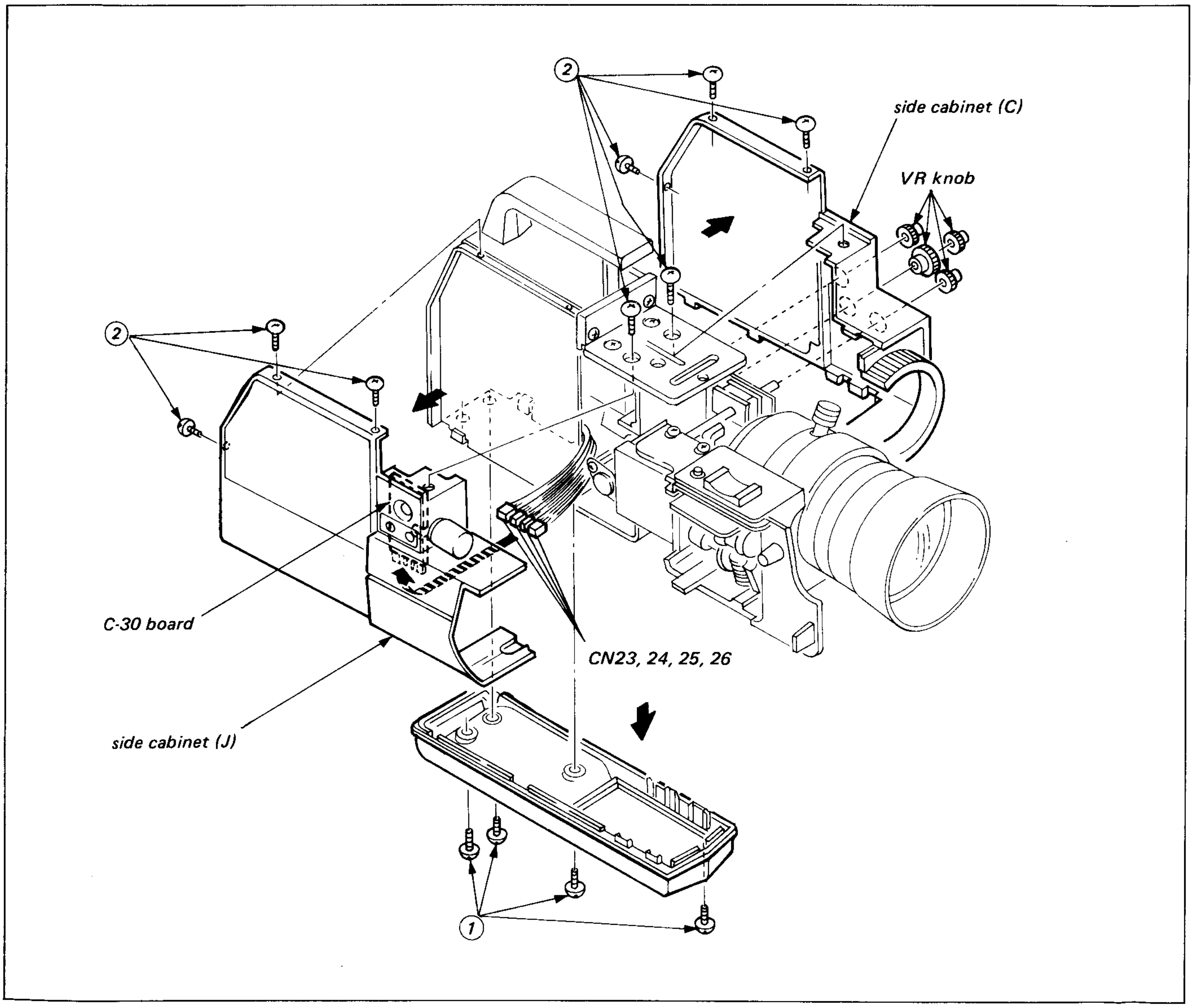
If you connect the supplied earpiece to the camera, you can monitor the sound from the microphone and the sound being recorded or played back of the recorder.
Select earpiece monitoring with the EARPIECE switch.

CH-1 : For earpiece monitoring of the built-in microphone or the external microphone connected to the CH-1 jack.
CH-2 : For earpiece monitoring of the built-in microphone or the external microphone connected to the CH-2 jack.
VTR : When connected to a recorder with a K-type (14-pin) connector, the sound being recorded or played back can be monitored through the earpiece.



SECTION 2
DISASSEMBLY AND REPLACEMENT

2-1. SIDE CABINET, SHOULDER PAD

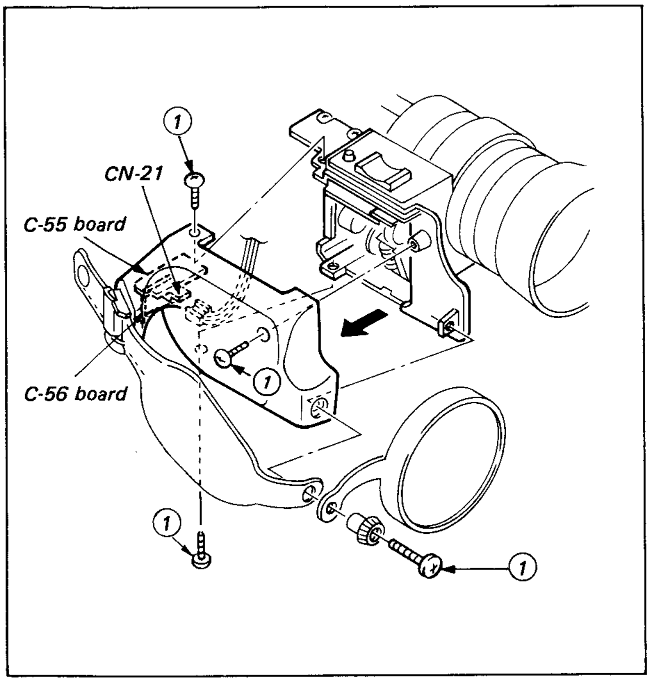

②
side cabinet (C)
VR knob
②
C-30 board
CN23, 24, 25, 26
side cabinet (J)
①

① Remove the four screws ① and remove the shoulder pad.

② Remove the eight screws ② and the side cabinet.

Note: The CN23–26 connector on the C-30 board on side cabinet (J) and the four VR knobs on side cabinet (C) must be removed. (Pull hard to remove.) Also, when removing the side panels, be sure to turn off the power supply.

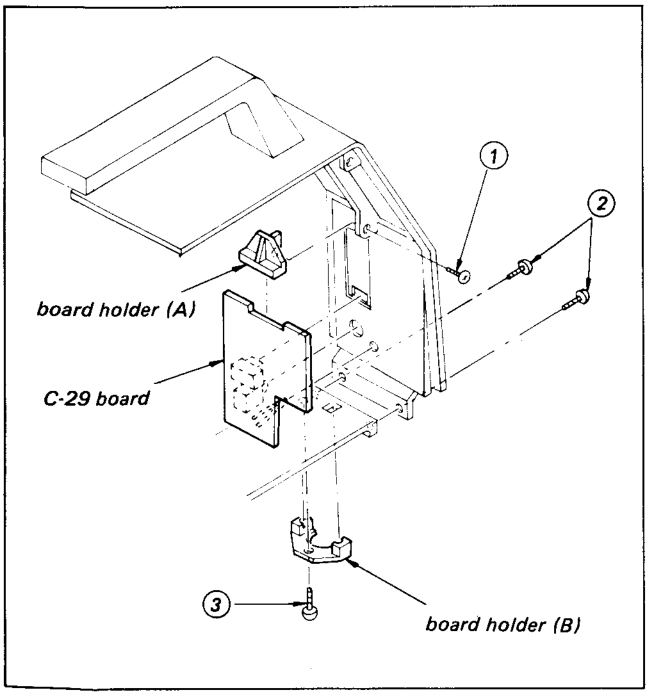
2-2. CONTROL GRIP SUB-ASSEMBLY


①
CN-21
C-55 board
C-56 board
①
①
①

Remove the four screws ① and pull the control grip sub-assembly off in the direction of the arrow.

Note: Remove the CN21 connector on the C-55 board.

2-3. C-29 BOARD

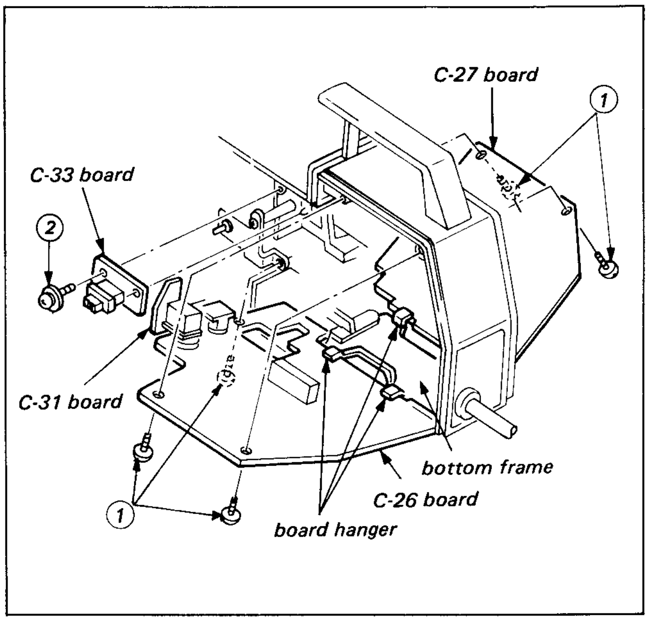

①
②
board holder (A)
C-29 board
③
board holder (B)

① Remove screw ① and pull out board holder (A).

② Remove the two screws ② and the C-29 board.

③ Remove screw ③ and board holder (B).

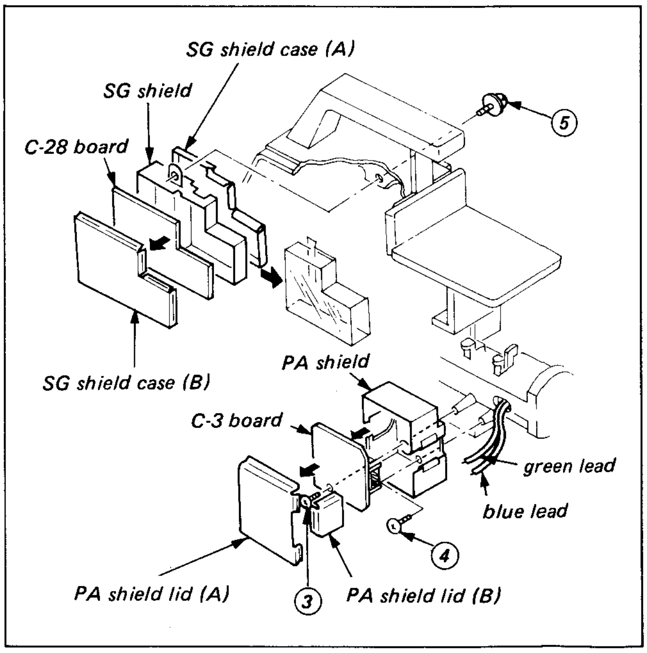
2-4. C-26, C-27, C-31, C-33 BOARDS


C-27 board
①
C-33 board
②
C-31 board
bottom frame
C-26 board
①
board hanger

① Remove the five screws ① and the C-26, C-27, C-31 boards and hang them on the bottom frame board hangers.

② Remove screw ② and the C-33 board.

2-5. C-3, C-28 BOARDS


SG shield case (A)
SG shield
C-28 board
⑤
SG shield case (B)
PA shield
C-3 board
green lead
blue lead
④
PA shield lid (A)
③
PA shield lid (B)

① Remove PA shield lids (A) and (B). Unsolder the C-3 board and PA shield.

② Remove screw ② and the C-3 board.

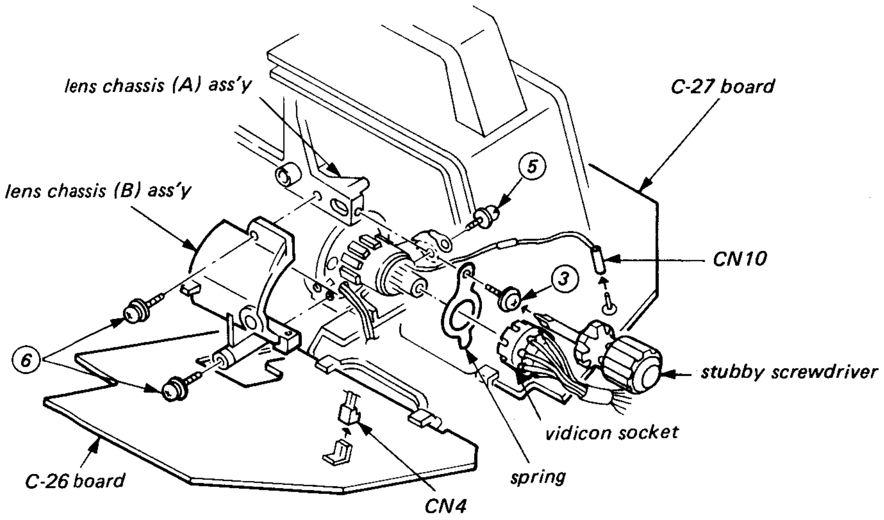
③ Remove screw ③ and the blue and green leads on the C-3 board, and remove the PA shield.

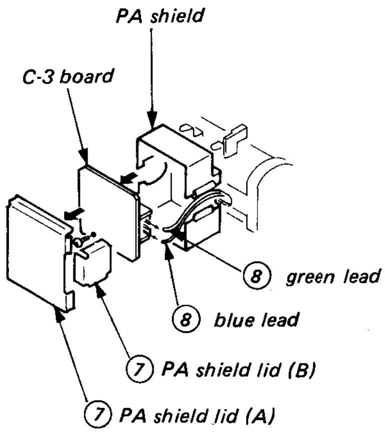
④ Remove screw ④ and the SG shield.

⑤ Remove the SG shield case (B) and unsolder the C-28 board from the shield.

2-6. REPLACEMENT OF TRINICON TUBE

❶ Removal of Lens Chassis (B) Assembly, Trinicon Tube Retainer, and Wiring


lens chassis (A) ass'y
lens chassis (B) ass'y
⑤
C-27 board
③
CN10
⑥
stubby screwdriver
vidicon socket
C-26 board
spring
CN4


PA shield
C-3 board
⑧ green lead
⑧ blue lead
⑦ PA shield lid (B)
⑦ PA shield lid (A)

① Remove the vidicon socket from the Trinicon tube.

② Disconnect the CN4 connector from the C-26 board.

③ Remove screw ③ and the Trinicon tube retainer.

Note: If a stubby screwdriver is used when removing screw ③, the Trinicon tube retainer can be easily removed.

④ Disconnect the CN10 connector from the C-27 board.

⑤ Remove screw ⑤ and the lug terminal

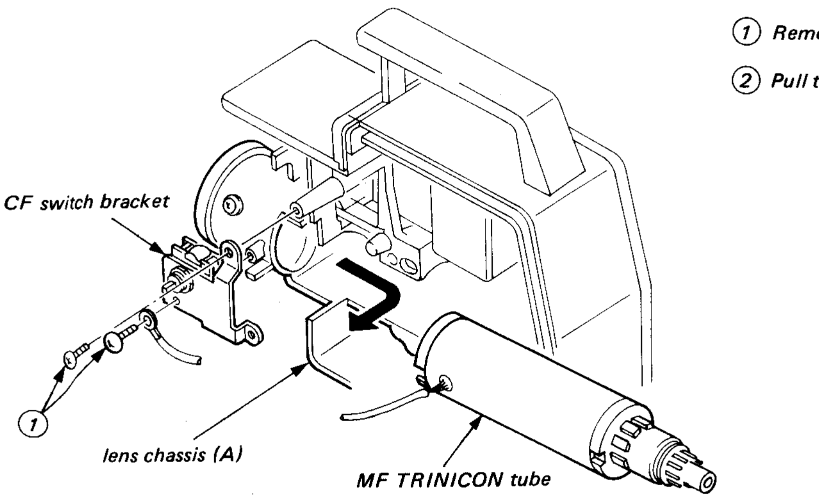
⑥ Remove the two screws ⑥ and the lens chassis (B) assembly.

⑦ Remove PA shield lids (A) and (B).

⑧ Disconnect the blue and green leads from the C-3 board.

Note: The green lead should be above the blue one.

❷ Removal of Trinicon Tube

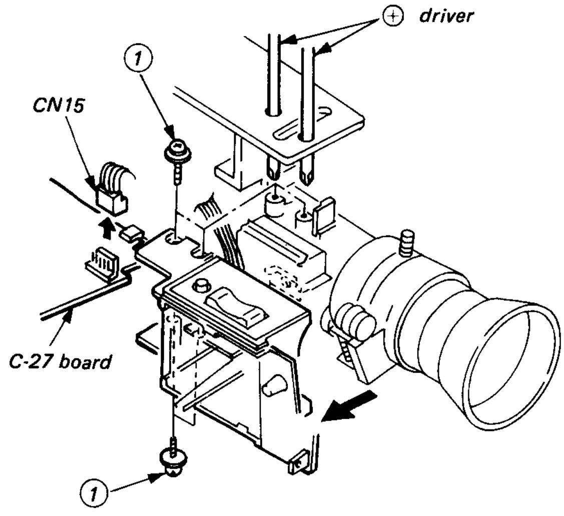

CF switch bracket
①
lens chassis (A)
MF TRINICON tube

① Remove the two screws ① and the CF switch bracket.

② Pull the Trinicon tube off in the direction of the arrow.

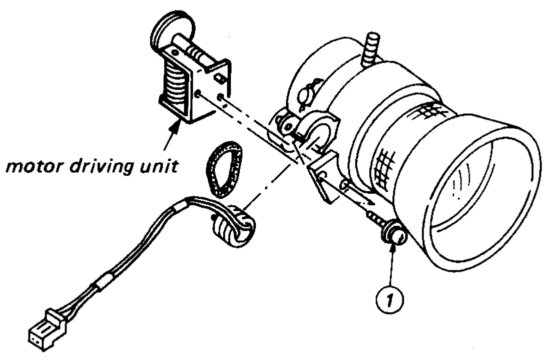
2-7. REPLACEMENT OF LENS AND MOTOR DRIVING UNIT

❶ Removal of Grip Holder Assembly


⊕ driver
①
CN15
C-27 board
①

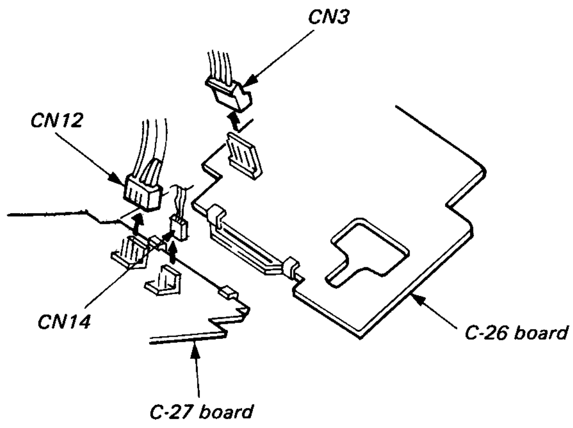
Remove the four screws ① and disconnect the CN15 connector from the C-27 board. Remove the grip holder assembly.

❷ Removal of Motor Driving Unit

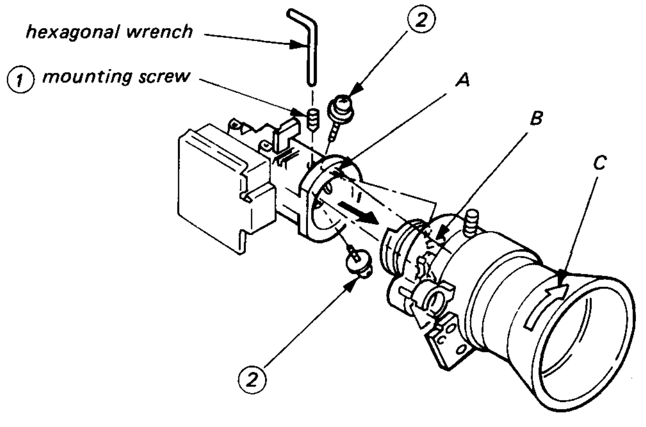

motor driving unit
①

Remove the two screws ① and the motor driving unit.

❸ Removal of Iris Motor Wiring (CN3, CN12, CN14) and Zoom Lens


CN3
CN12
CN14
C-26 board
C-27 board

Disconnect the CN3 connector from the C-26 board and the CN12, CN14 connector from the C-27 board.


hexagonal wrench
① mounting screw
②
A
B
C
②

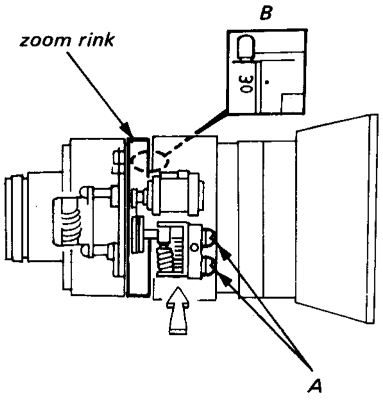
① *Loosen mounting screw ① with a hexagonal wrench.*

② *Remove the two screws ② and pull the lens off in the direction of the arrow.*

Note: To re-mount, insert A into B and turn clockwise C.

2-8. MOUNTING AND ADJUSTMENT OF MOTOR DRIVING UNIT

❶ Mounting of Motor Driving Unit

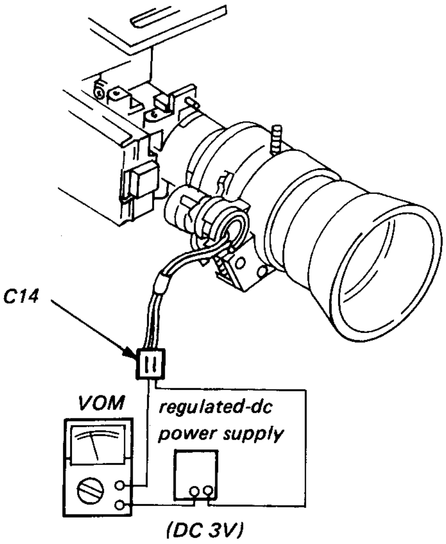


① *Tighten the motor driving unit mounting screw A, but only enough so that the unit can still move.*

② *Set the zoom scale of the zoom lens to 30mm as shown at B.*

③ *Push the motor driving unit in the direction of the arrow and tighten screw A completely.*

❷ Motor Driving Unit Adjustment



Make the connections shown above and confirm that the fluctuation is within 5mA (± 2.5mA). If the DC current is more than 30mA, repeat step 1.

Note: The DC current flow is approximately 20mA.

2-9. CR CAM ADJUSTMENT

1. Remove the side panels, shoulder pad, control grip sub-assembly, jack panel sub-assembly, C-26 and C-27 board. (See 2-1 ~ 5)
2. Remove screws① and②. Remove the VF bracket cover and rear frame assembly.
3. Set the WHITE BALANCE control to [2 ▭]. (See Figure C)
4. Loosen screw ③ and position the CF cam plate and CF link rod as shown in Figure B. However, the CF cam plate shaft direction should be as shown in Figure A.
5. Tighten screw③ after completing the adjustment and apply lock paint. Apply grease to the location where the CF cam plate and CF link rod come into contact.

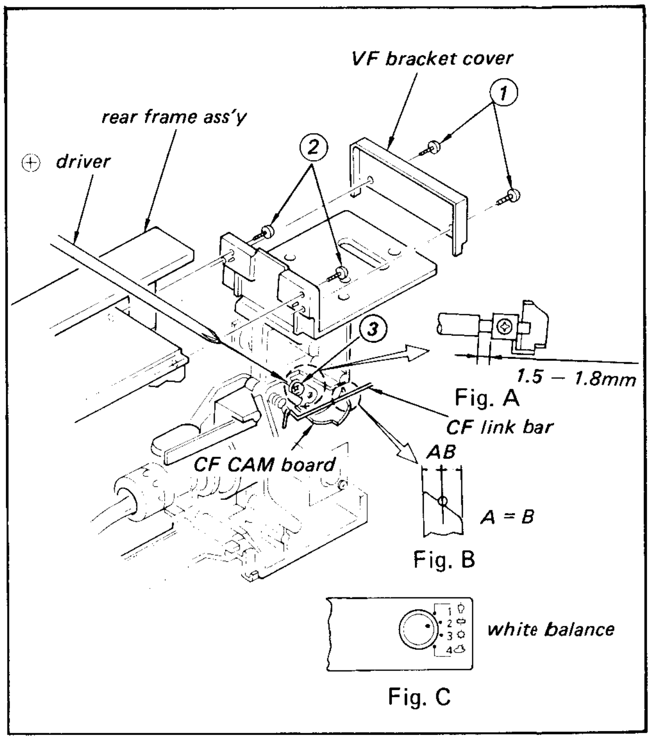
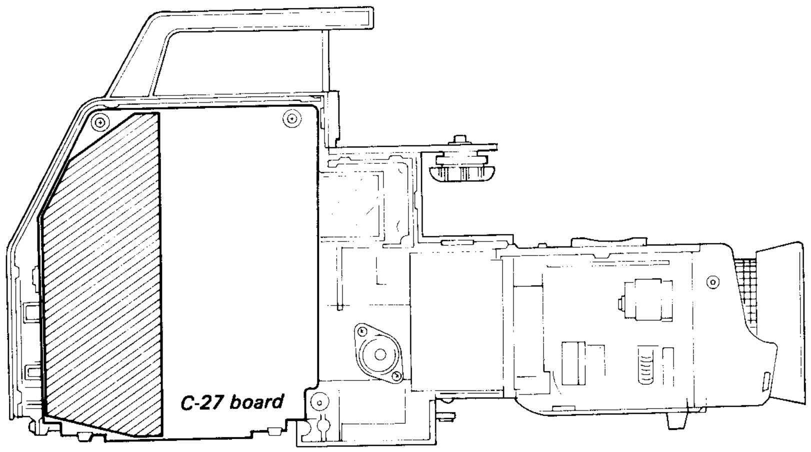

VF bracket cover
①
rear frame ass'y
②
⊕ driver
③
1.5 – 1.8mm
CF link bar
CF CAM board
AB
A = B
1
2
3
4
white balance

Fig. A

Fig. B

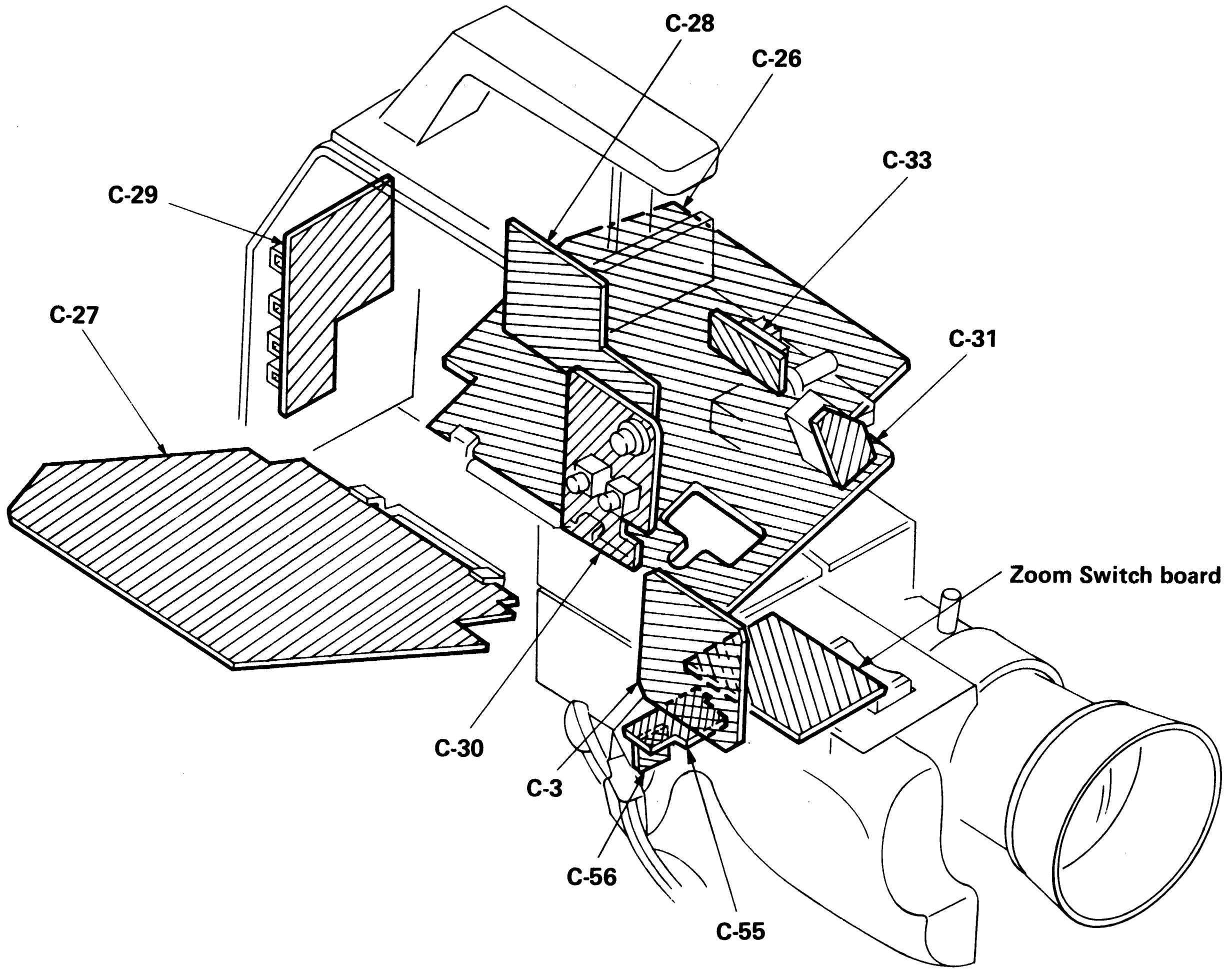
Fig. C

Note: The shaded portion is a high voltage area. There is a danger of electrical shock if this area is touched.

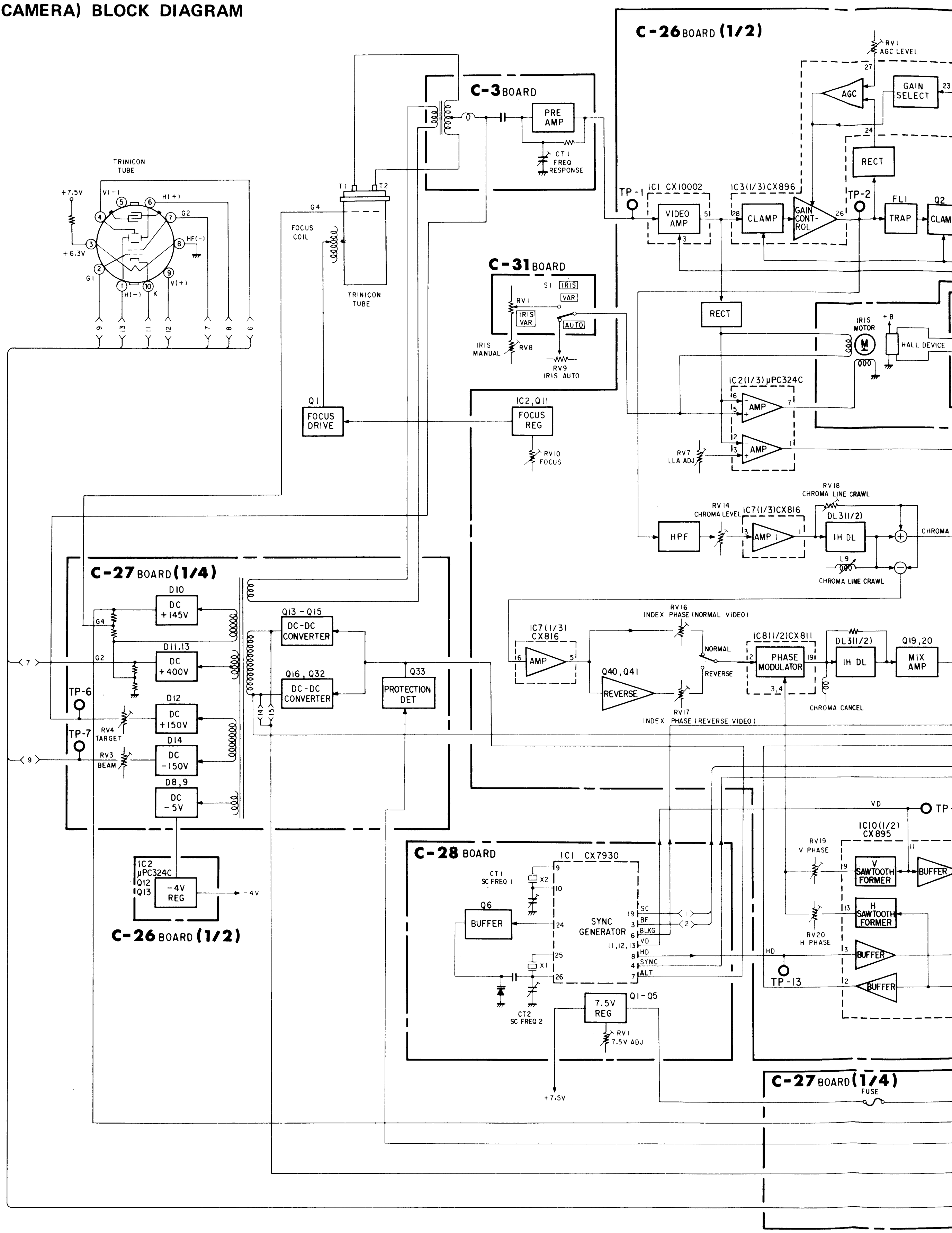


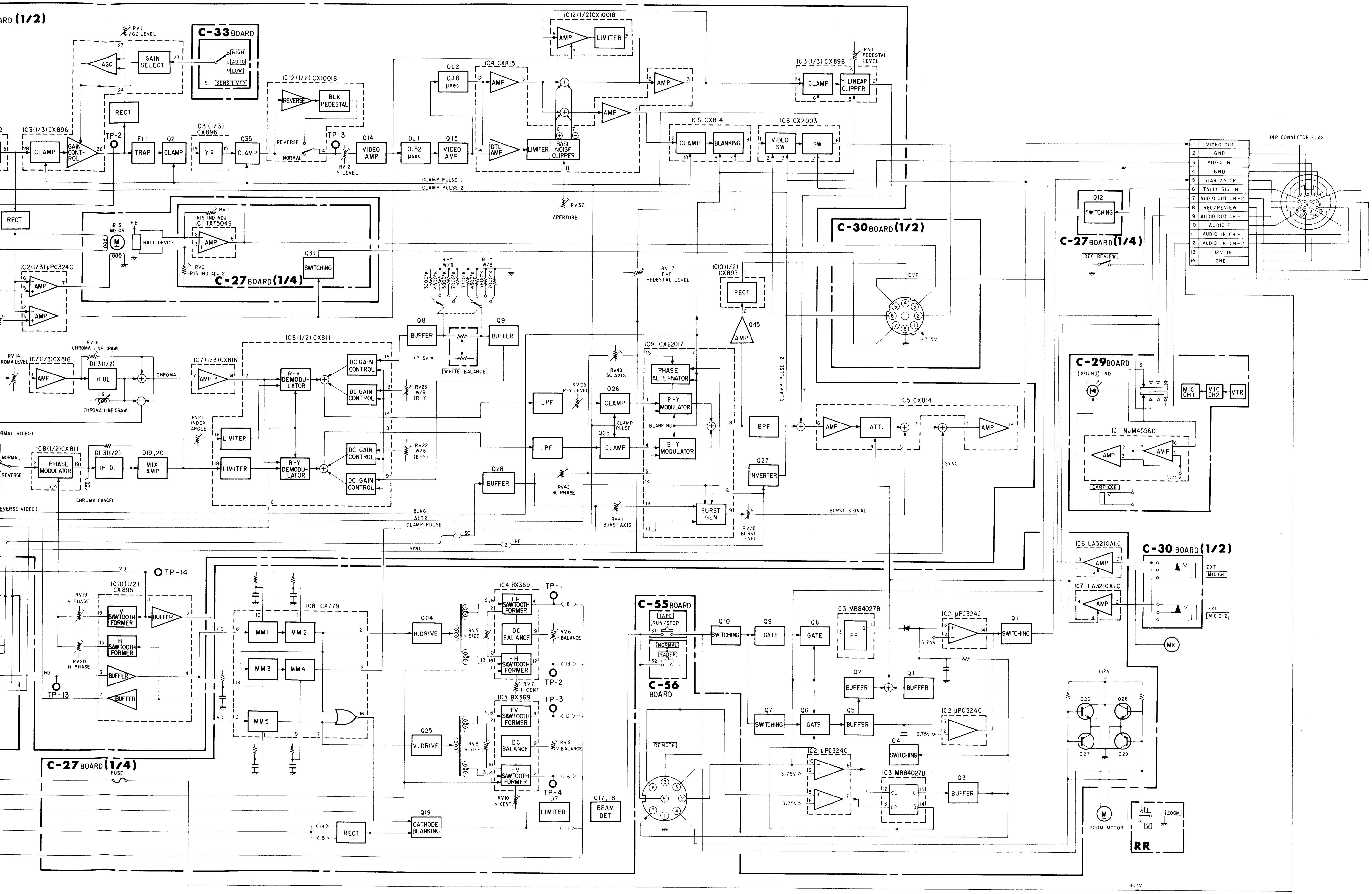
SECTION 3
DIAGRAMS AND CIRCUIT BOARDS LOCATION

3-1. CIRCUIT BOARDS LOCATION

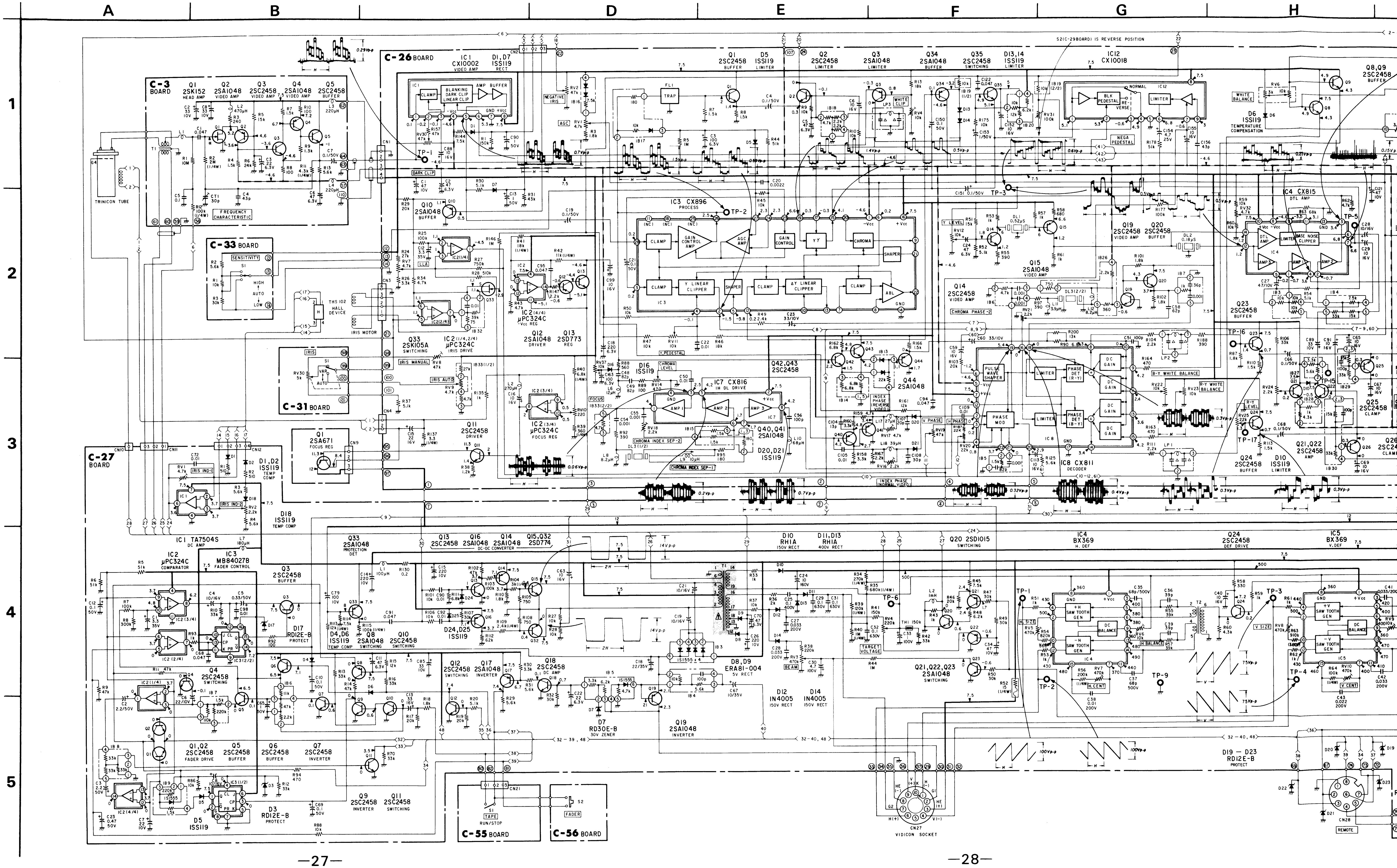

C-28
C-26
C-33
C-29
C-27
C-31
Zoom Switch board
C-30
C-3
C-56
C-55

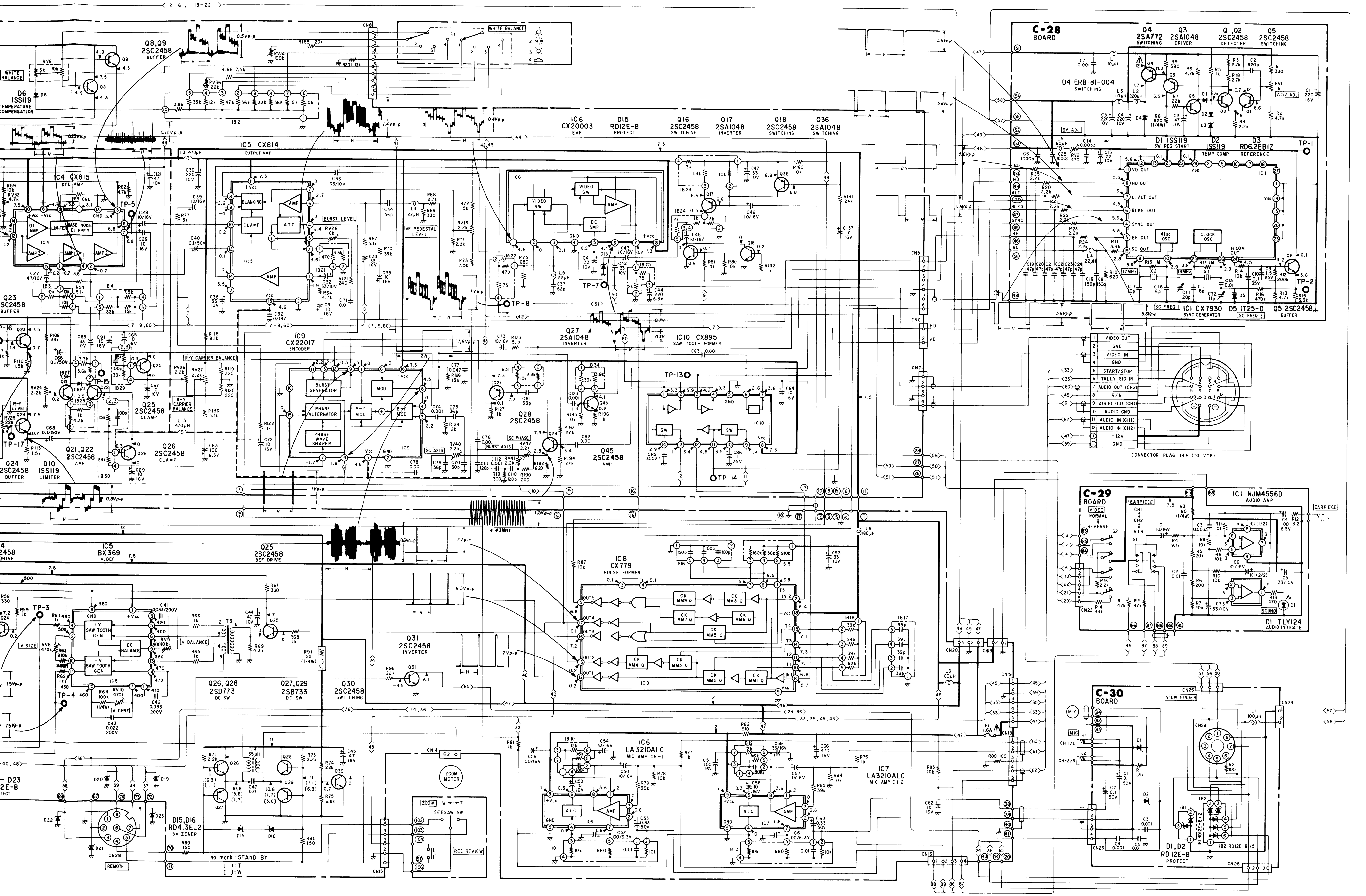
3-2. HVC-4000P (CAMERA) BLOCK DIAGRAM


C-26 BOARD (1/2)
RV1 AGC LEVEL
AGC
GAIN SELECT
RECT
C-3 BOARD
PRE AMP
CT1 FREQ RESPONSE
TRINICON TUBE
+7.5V
+6.3V
V(-)
H(+)
G2
HF(-)
G1
H(-)
K
V(+)
G4
FOCUS COIL
T1
T2
TP-1
IC1 CX10002
VIDEO AMP
IC3(1/3)CX896
CLAMP
GAIN CONTROL
TP-2
FL1
TRAP
Q2
CLAM
C-31 BOARD
S1 IRIS VAR
RV1 IRIS VAR
AUTO
IRIS MANUAL
RV8
RV9 IRIS AUTO
RECT
IRIS MOTOR
M
HALL DEVICE
IC2(1/3)μPC324C
AMP
AMP
RV7 LLA ADJ
Q1
FOCUS DRIVE
IC2,Q11
FOCUS REG
RV10 FOCUS
RV18 CHROMA LINE CRAWL
RV14 CHROMA LEVEL
IC7(1/3)CX816
HPF
AMP
DL3(1/2)
1H DL
L9
CHROMA LINE CRAWL
CHROMA
C-27 BOARD (1/4)
D10
DC +145V
D11,13
DC +400V
D12
DC +150V
D14
DC -150V
D8,9
DC -5V
Q13-Q15
DC-DC CONVERTER
Q16,Q32
DC-DC CONVERTER
Q33
PROTECTION DET
TP-6
TP-7
RV4 TARGET
RV3 BEAM
RV16 INDEX PHASE (NORMAL VIDEO)
IC7(1/3) CX816
AMP
Q40,Q41
REVERSE
NORMAL
REVERSE
RV17 INDEX PHASE (REVERSE VIDEO)
IC8(1/2)CX811
PHASE MODULATOR
DL3(1/2)
1H DL
Q19,20
MIX AMP
CHROMA CANCEL
IC2 μPC324C Q12 Q13
-4V REG
-4V
C-26 BOARD (1/2)
C-28 BOARD
IC1 CX7930
CT1 SC FREQ 1
X2
Q6
BUFFER
SYNC GENERATOR
SC
BF
BLKG
VD
HD
SYNC
ALT
X1
CT2 SC FREQ 2
7.5V REG
Q1-Q5
RV1 7.5V ADJ
+7.5V
VD
TP
IC10(1/2) CX895
RV19 V PHASE
V SAWTOOTH FORMER
BUFFER
RV20 H PHASE
H SAWTOOTH FORMER
HD
TP-13
BUFFER
BUFFER
C-27 BOARD (1/4)
FUSE


ARD (1/2)
C-33 BOARD
S1 SENSITIVTY
HIGH
AUTO
LOW
RV1 AGC LEVEL
AGC
GAIN SELECT
RECT
IC3(1/3)CX896
CLAMP
GAIN CONT-ROL
TP-2
FL1 TRAP
Q2 CLAMP
IC3(1/3) CX896 Yγ
Q35 CLAMP
IC12(1/2) CX10018
REVERSE
BLK PEDESTAL
NORMAL
TP-3
RV12 Y LEVEL
Q14 VIDEO AMP
DL1 0.52 μsec
Q15 VIDEO AMP
DL2 0.18 μsec
IC4 CX815
AMP
DTL AMP
LIMITER
BASE NOISE CLIPPER
RV32 APERTURE
IC12(1/2)CX10018
AMP
LIMITER
AMP
IC3(1/3) CX896
RV11 PEDESTAL LEVEL
CLAMP
Y LINEAR CLIPPER
IC5 CX814
CLAMP
BLANKING
IC6 CX2003
VIDEO SW
SW
CLAMP PULSE 1
CLAMP PULSE 2
RECT
IRIS MOTOR
HALL DEVICE
RV1 IRIS IND ADJ 1
IC1 TA7504S
AMP
RV2 IRIS IND ADJ 2
Q31 SWITCHING
C-27 BOARD (1/4)
IC2(1/3)μPC324C
AMP
AMP
RV18 CHROMA LINE CRAWL
RV14 CHROMA LEVEL
IC7(1/3)CX816 AMP 1
DL3(1/2) 1H DL
CHROMA
CHROMA LINE CRAWL
IC7(1/3)CX816 AMP 3
IC8(1/2) CX811
R-Y DEMODU-LATOR
B-Y DEMODU-LATOR
DC GAIN CONTROL
RV21 INDEX ANGLE
LIMITER
LIMITER
R-Y W/B
B-Y W/B
3200°K 4500°K 5800°K 7000°K
Q8 BUFFER
Q9 BUFFER
+7.5V
WHITE BALANCE
RV23 W/B (R-Y)
RV22 W/B (B-Y)
NORMAL VIDEO
IC8(1/2)CX811 PHASE MODULATOR
NORMAL
REVERSE
DL3(1/2) 1H DL
Q19,20 MIX AMP
CHROMA CANCEL
REVERSE VIDEO
Q28 BUFFER
RV42 SC PHASE
BLKG
ALT 2
CLAMP PULSE 1
SC
BF
SYNC
LPF
LPF
RV25 R-Y LEVEL
Q26 CLAMP
Q25 CLAMP
CLAMP PULSE 1
RV40 SC AXIS
RV41 BURST AXIS
RV13 EVF PEDESTAL LEVEL
IC9 CX22017
PHASE ALTERNATOR
R-Y MODULATOR
B-Y MODULATOR
BLANKING
BURST GEN
RV28 BURST LEVEL
IC10(1/2) CX895
RECT
Q45 AMP
BPF
Q27 INVERTER
CLAMP PULSE 2
BURST SIGNAL
C-30 BOARD (1/2)
EVF
+7.5V
IC5 CX814
AMP
ATT.
AMP
SYNC
14P CONNECTOR PLAG
1 VIDEO OUT
2 GND
3 VIDEO IN
4 GND
5 START/STOP
6 TALLY SIG IN
7 AUDIO OUT CH-2
8 REC/REVIEW
9 AUDIO OUT CH-1
10 AUDIO E
11 AUDIO IN CH-1
12 AUDIO IN CH-2
13 +12V IN
14 GND
Q12 SWITCHING
C-27 BOARD (1/4)
REC REVIEW
C-29 BOARD
SOUND IND
D1
S1
MIC CH1
MIC CH2
VTR
IC1 NJM4556D
AMP
AMP
EARPIECE
IC6 LA3210ALC AMP
IC7 LA3210ALC AMP
C-30 BOARD (1/2)
EXT MIC CH1
EXT MIC CH2
MIC
VD
TP-14
IC10(1/2) CX895
RV19 V PHASE
V SAWTOOTH FORMER
H SAWTOOTH FORMER
RV20 H PHASE
BUFFER
BUFFER
BUFFER
HD
TP-13
IC8 CX779
MM1
MM2
MM3
MM4
MM5
Q24 H.DRIVE
Q25 V.DRIVE
IC4 BX369
+H SAWTOOTH FORMER
DC BALANCE
-H SAWTOOTH FORMER
RV5 H SIZE
RV6 H BALANCE
RV7 H CENT
TP-1
TP-2
IC5 BX369
+V SAWTOOTH FORMER
DC BALANCE
-V SAWTOOTH FORMER
RV8 V SIZE
RV9 V BALANCE
RV10 V CENT
TP-3
TP-4
D7 LIMITER
Q17,18 BEAM DET
Q19 CATHODE BLANKING
RECT
C-27 BOARD (1/4)
FUSE
C-55 BOARD
TAPE RUN/STOP
S1
NORMAL FADER
S2
C-56 BOARD
REMOTE
Q10 SWITCHING
Q9 GATE
Q8 GATE
IC3 MB84027B FF
IC2 μPC324C
Q11 SWITCHING
3.75V
Q2 BUFFER
Q1 BUFFER
Q7 SWITCHING
Q6 GATE
Q5 BUFFER
IC2 μPC324C
Q4 SWITCHING
IC2 μPC324C
IC3 MB84027B
Q3 BUFFER
+12V
Q26
Q28
Q27
Q29
ZOOM MOTOR
T
W
ZOOM
RR
+12V

3-3. HVC-4000P (CAMERA) SCHEMATIC DIAGRAM – *Ref. No. C-3 BOARD: 1400 series, C-26 BOARD: 1000 series , C-27 BOARD: 2000 series, C-28 BOARD: 1800 series, C-29 BOARD: 2200 series, C-30 BOARD: 2400 series, C-31 BOARD: 2600 series, C-33 BOARD: 3000 series, C-55 BOARD: 3600 series*


A
B
D
E
F
G
H
1
2
3
4
5
C-3 BOARD
Q1 2SK152 HEAD AMP
Q2 2SA1048 VIDEO AMP
Q3 2SC2458 VIDEO AMP
Q4 2SA1048 VIDEO AMP
Q5 2SC2458 BUFFER
TRINICON TUBE
FREQUENCY CHARACTERISTIC
C-26 BOARD
IC1 CX10002 VIDEO AMP
D1,D7 1SS119 RECT
CLAMP
BLANKING DARK CLIP LINEAR CLIP
AMP
BUFFER
NEGATIVE IRIS
AGC
TP-1
DARK CLIP
Q10 2SA1048 BUFFER
LLA
IC2 (1/4) µPC324C -Vcc REG
Q12 2SA1048 DRIVER
Q13 2SD773 REG
Q33 2SK105A SWITCHING
IC2 (1/4,2/4) µPC324C IRIS DRIVE
IRIS MOTOR
THS 102 HALL DEVICE
IRIS MANUAL
IRIS AUTO
IC2 (3/4) µPC324C FOCUS REG
Q11 2SC2458 DRIVER
C-33 BOARD
SENSITIVITY
HIGH
LOW
C-31 BOARD
IRIS
AUTO
C-27 BOARD
Q1 2SA671 FOCUS REG
IC1 TA7504S DC AMP
D1,D2 1SS119 TEMP COMP
D18 1SS119 TEMP COMP
IRIS IND-1
IRIS IND-2
Q1 2SC2458 BUFFER
D5 1SS119 LIMITER
FL1
TRAP
IC3 CX896 PROCESS
TP-2
GAIN CONTROL AMP
AGC AMP
GAIN CONTROL
YT
CHROMA
SHAPER
Y LINEAR CLIPPER
ΔY LINEAR CLIPPER
ABL
Y PEDESTAL
IC7 CX816 1H DL DRIVE
AMP 1
AMP 2
AMP 3
Q42,Q43 2SC2458
Q40,Q41 2SA1048
D20,D21 1SS119
D16 1SS119
CHROMA LEVEL
FOCUS
CHROMA INDEX SEP-2
CHROMA INDEX SEP-1
Q2 2SC2458 LIMITER
Q3 2SA1048 LIMITER
Q34 2SA1048 BUFFER
Q35 2SC2458 SWITCHING
D13,14 1SS119 LIMITER
WHITE CLIP
IC12 CX10018
BLK PEDESTAL
NORMAL
REVERSE
LIMITER
NEGA PEDESTAL
S2(C-29BOARD) IS REVERSE POSITION
WHITE BALANCE
D6 1SS119 TEMPERATURE COMPENSATION
Q8,Q9 2SC2458 BUFFER
TP-3
Y LEVEL
Q14 2SC2458 VIDEO AMP
Q15 2SA1048 VIDEO AMP
Q19 2SC2458 VIDEO AMP
Q20 2SC2458 BUFFER
CHROMA PHASE-2
IC4 CX815 DTL AMP
DTL AMP
LIMITER
BASE NOISE CLIPPER
AMP 3
AMP 1
AMP 2
TP-5
Q23 2SC2458 BUFFER
Q44 2SA1048
INDEX PHASE REVERSE
V PHASE
H PHASE
PULSE WAVE SHAPER
PHASE MOD
PHASE DET (R-Y)
PHASE DET (B-Y)
DC GAIN
IC8 CX811 DECODER
B-Y WHITE BALANCE
R-Y WHITE BALANCE
INDEX PHASE (NORMAL VIDEO)
TP-6
TP-16
TP-17
TP-15
R-Y LEVEL
Q21,Q22 2SC2458 AMP
Q24 2SC2458 BUFFER
D10 1SS119 LIMITER
Q25 2SC2458 CLAMP
Q26 2SC24
IC2 µPC324C COMPARATOR
IC3 MB84027B FADER CONTROL
Q3 2SC2458 BUFFER
D17 RD12E-B PROTECT
Q4 2SC2458 SWITCHING
Q1,Q2 2SC2458 FADER DRIVE
Q5 2SC2458 BUFFER
Q6 2SC2458 BUFFER
Q7 2SC2458 INVERTER
D3 RD12E-B PROTECT
D5 1SS119
Q9 2SC2458 INVERTER
Q11 2SC2458 SWITCHING
Q33 2SA1048 PROTECTION DET
Q8 2SA1048 SWITCHING
Q10 2SC2458 SWITCHING
D4,D6 1SS119 TEMP COMP
Q13 2SC2458
Q16 2SA1048
Q14 2SA1048
Q15,Q32 2SD774
DC-DC CONVERTER
D24,D25 1SS119
Q12 2SC2458 SWITCHING
Q17 2SA1048 INVERTER
Q18 2SC2458 DC AMP
D7 RD30E-B 30V ZENER
Q19 2SA1048 INVERTER
D8,D9 ERA81-004 5V RECT
D10 RH1A 150V RECT
D11,D13 RH1A 400V RECT
D12 1N4005 150V RECT
D14 1N4005 150V RECT
Q20 2SD1015 SWITCHING
TARGET VOLTAGE
BEAM
Q21,Q22,Q23 2SA1048 SWITCHING
IC4 BX369 H. DEF
SAW TOOTH GEN
DC BALANCE
H SIZE
H CENT
H BALANCE
Q24 2SC2458 DEF DRIVE
V SIZE
IC5 BX369 V. DEF
V CENT
TP-9
TP-4
D19 – D23 RD12E-B PROTECT
C-55 BOARD
S1 TAPE RUN/STOP
C-56 BOARD
S2 FADER
CN27 VIDICON SOCKET
CN28
REMOTE



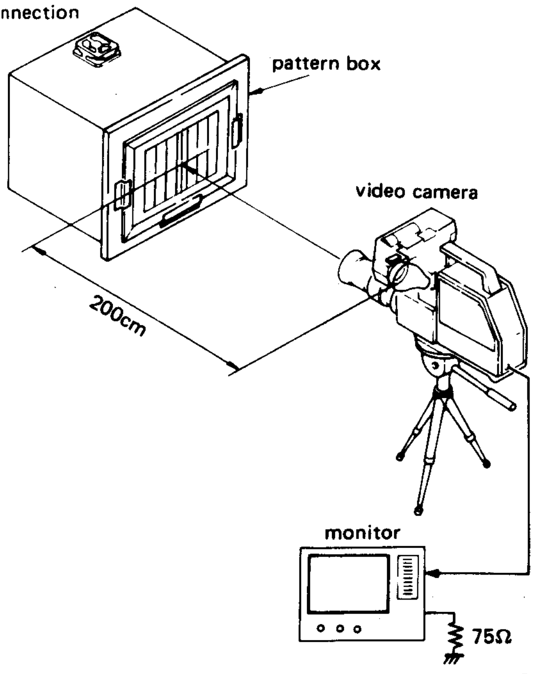
Q8,Q9 2SC2458 BUFFER
WHITE BALANCE
D6 1SS119 TEMPERATURE COMPENSATION
IC4 CX815 DTL AMP
IC5 CX814 OUTPUT AMP
IC6 CX20003 EVF
D15 RD12E-B PROTECT
Q16 2SC2458 SWITCHING
Q17 2SA1048 INVERTER
Q18 2SC2458 SWITCHING
Q36 2SA1048 SWITCHING
C-28 BOARD
Q4 2SA772 SWITCHING
Q3 2SA1048 DRIVER
Q1,Q2 2SC2458 DETECTER
Q5 2SC2458 SWITCHING
D4 ERB-81-004 SWITCHING
D1 1SS119 SW REG START
D2 1SS119 TEMP COMP
D3 RD6.2EBIZ REFERENCE
IC1 CX7930 SYNC GENERATOR
D5 1T25-0
Q5 2SC2458 BUFFER
TP-1
TP-2
Q23 2SC2458 BUFFER
IC9 CX22017 ENCODER
Q27 2SA1048 INVERTER
IC10 CX895 SAW TOOTH FORMER
TP-13
TP-14
Q28 2SC2458
Q45 2SC2458 AMP
Q25 2SC2458 CLAMP
Q26 2SC2458 CLAMP
Q21,Q22 2SC2458 AMP
Q24 2SC2458 BUFFER
D10 1SS119 LIMITER
TP-5
TP-7
TP-8
TP-15
TP-16
TP-17
CONNECTOR PLAG 14P (TO VTR)
VIDEO OUT
GND
VIDEO IN
START/STOP
TALLY SIG IN
AUDIO OUT (CH2)
R/R
AUDIO OUT (CH1)
AUDIO GND
AUDIO IN (CH1)
AUDIO IN (CH2)
+12V
C-29 BOARD
IC1 NJM4556D AUDIO AMP
EARPIECE
D1 TLY124 AUDIO INDICATE
IC5 BX369 V.DEF
Q25 2SC2458 DEF DRIVE
TP-3
TP-4
V SIZE
V BALANCE
V CENT
IC8 CX779 PULSE FORMER
Q31 2SC2458 INVERTER
Q26,Q28 2SD773 DC SW
Q27,Q29 2SB733 DC SW
Q30 2SC2458 SWITCHING
IC6 LA3210ALC MIC AMP CH-1
IC7 LA3210ALC MIC AMP CH-2
ZOOM MOTOR
ZOOM
SEESAW SW
REC REVIEW
D15,D16 RD4.3EL2 5V ZENER
no mark : STAND BY
( ) : T
[ ] : W
REMOTE
C-30 BOARD
VIEW FINDER
MIC
D1,D2 RD12E-B PROTECT

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

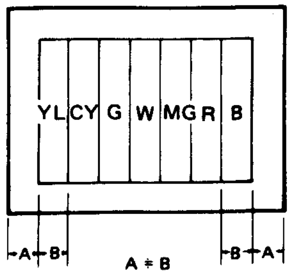
Note:

- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/8W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- ▭ : nonflammable resistor.
- ☐ : panel designation.
- △ : internal component.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10MΩ digital multimeter.
- All waveforms are taken in conditions below.
  Colour bar pattern
  colour temperature 3200 ± 50°K
  luminance 706 $^{+25}_{-47}$ cd/m^2 (nt)
- Voltage variations may be noted due to normal production tolerances.
- * : selected to yield optimum performance.
- ☐ : adjustment for repair.
  Colour bar pattern
  colour temperature 3200 ± 50°K
  luminance 706 $^{+25}_{-47}$ cd/m^2 (nt)

1. Connection

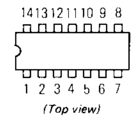

pattern box
video camera
200cm
monitor
75Ω

2. Shoot the subject so that the picture frame on the monitor is as shown in the figure below.


YL
CY
G
W
MG
R
B
A
B
A ≒ B
B
A

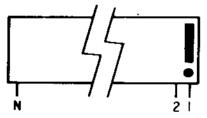
3-4. SEMICONDUCTORS (HVC-4000P)

μPC324C

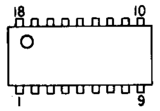

14 13 12 11 10 9 8
1 2 3 4 5 6 7

(Top view)

BX369

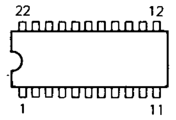


CX779



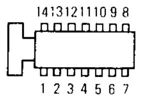
(Top view)

CX811



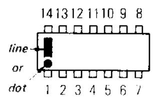
(Top view)

CX814


14 13 12 11 10 9 8
1 2 3 4 5 6 7

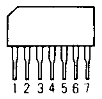
(Top view)

CX815

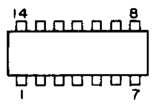

14 13 12 11 10 9 8
line
or
dot
1 2 3 4 5 6 7

(Top view)

CX816
TA7504S-R

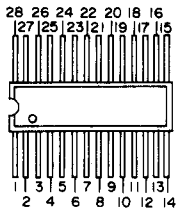


CX895
CX7930

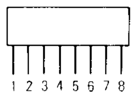


(Top view)

CX896

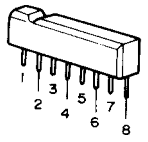

28 26 24 22 20 18 16
27 25 23 21 19 17 15
1 3 5 7 9 11 13
2 4 6 8 10 12 14

CX10002

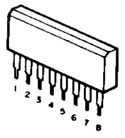


(Marking side view)

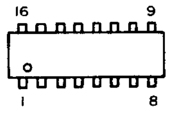
CX10018



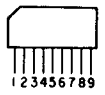
CX20003



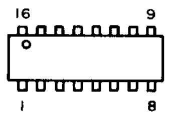
CX22017



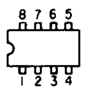
LA3210ALC



MB84027B

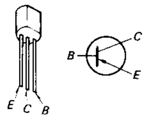


NJM4556D

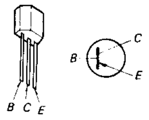


(Top view)

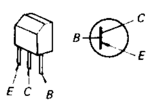
2SA772-14



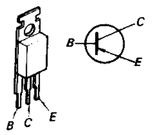
2SA1048



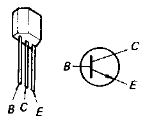
2SB733



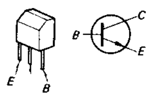
2SB834



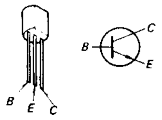
2SC2458



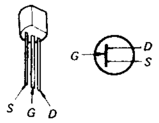
2SD773
2SD774



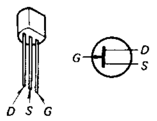
2SD1015



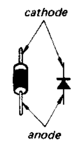
2SK105A-30



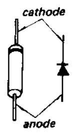
2SK152-3



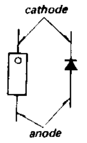
1N4005


cathode
anode

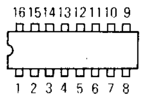
1SS119
RD3.0E-B
RD4.3E-L2
RD6.2E-B1Z
RD12E-B
RD12E-B2


cathode
anode

1T25

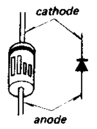

cathode
anode

ERA81-004
ERB81-004

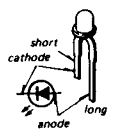

16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8

(Top view)

RH1A


cathode
anode

TLY124


short
cathode
long
anode

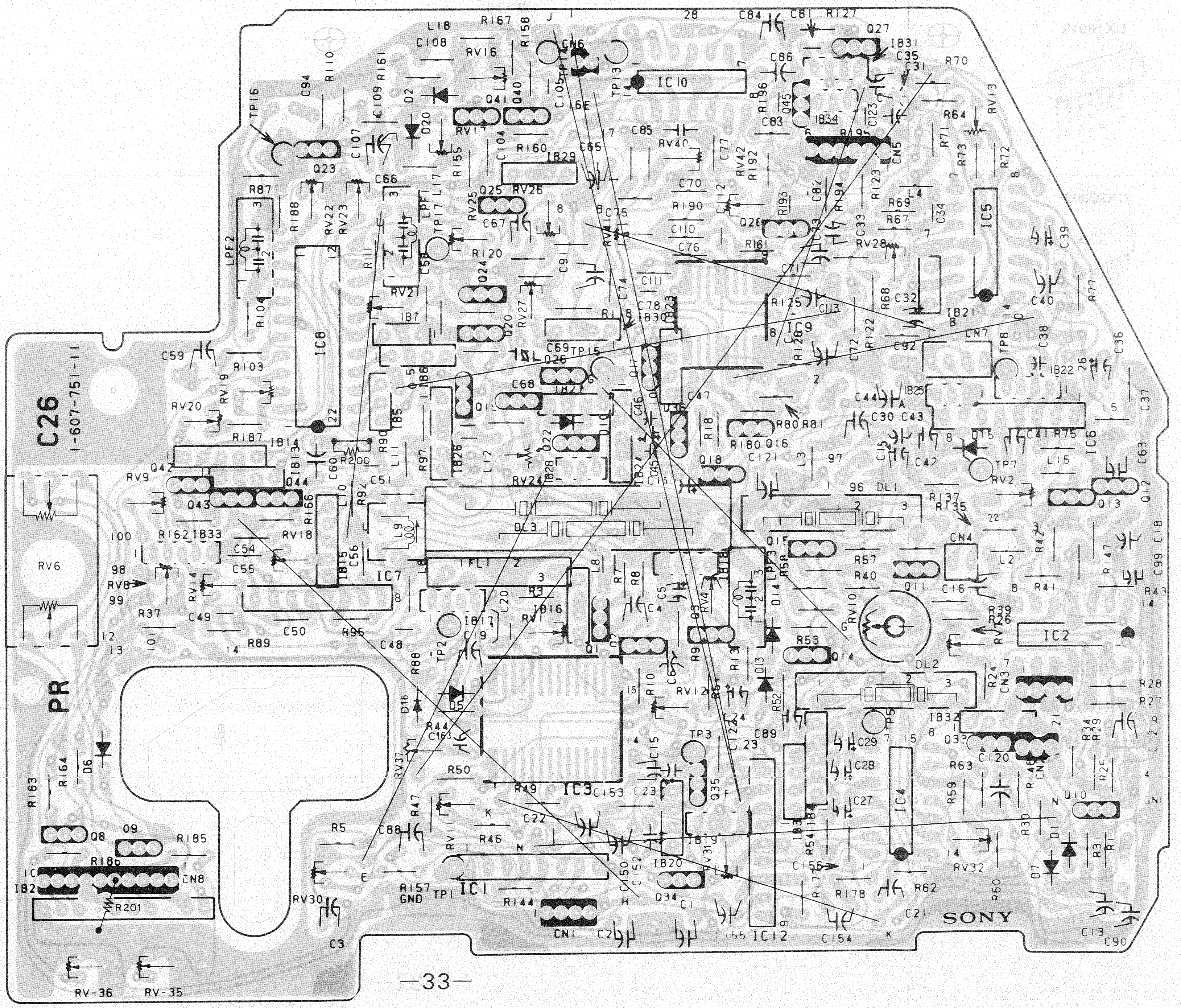
3-5. HVC-4000P (CAMERA) PRINTED WIRING BOARDS **C-3** **C-26** **C-28** **C-29**

– Conductor Side –

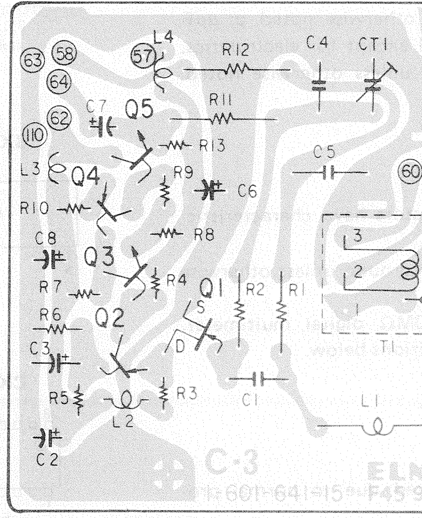
– Ref. No. C-3 BOARD: 1400 series, C-26 BOARD: 1000 series, C-28 BOARD: 1800 series, C-29 BOARD: 2200 series –

C-26 BOARD

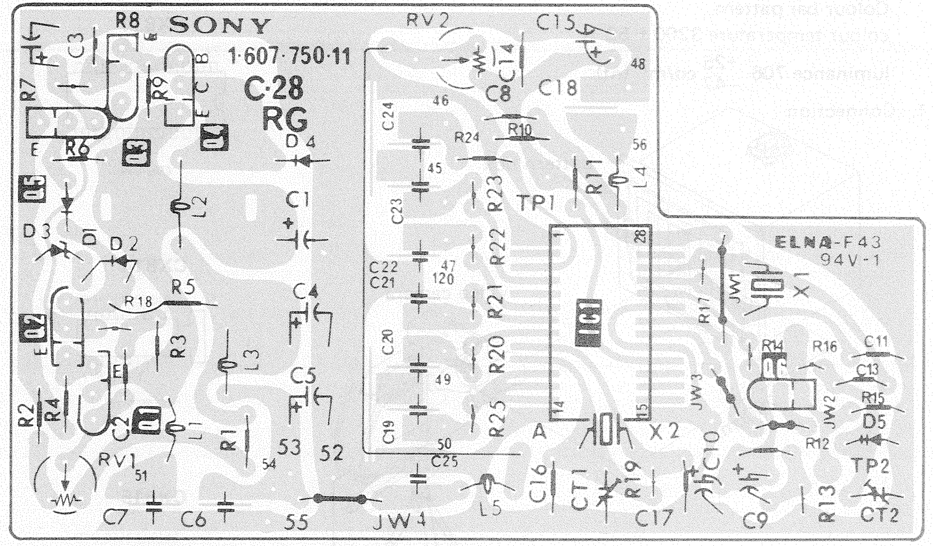
	A	B	C	D	E
IC,Q	8 9	42 43 44 IC8 IC7	41 40 25 24 19 20 IC3 26 22 IC1 17 1 2 34 35 36 3 IC10 IC9 18	16 IC12 28 45 15 27 11 IC4 IC5	33 IC6 IC2 13 12 10
D	6	20 21 16 5	10	13 14 15	7 1
ADJ	RV6 RV36 RV9 RV8 RV35	RV20 RV14 RV19 RV18 RV22 RV23 RV30 RV21 RV37 RV11 RV17	RV16 RV25 RV24 RV27 RV1 RV26 RV41 RV40 RV12 RV4	RV31 RV42 RV28 RV10 RV13 RV7 RV32	RV2
TP		16 17 2 1	14 13 15 3	5 8 7	


C26
1-607-751-11
PR
SONY
RV-36
RV-35

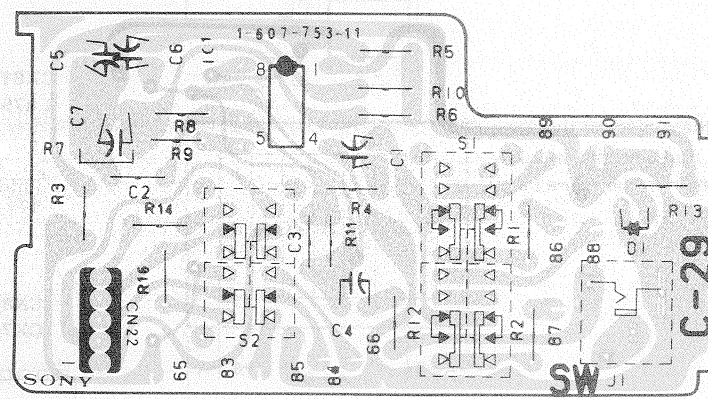
C-3 BOARD



C-28 BOARD


SONY
1·607·750·11
C·28
RG
ELNA-F43
94V-1

C-29 BOARD

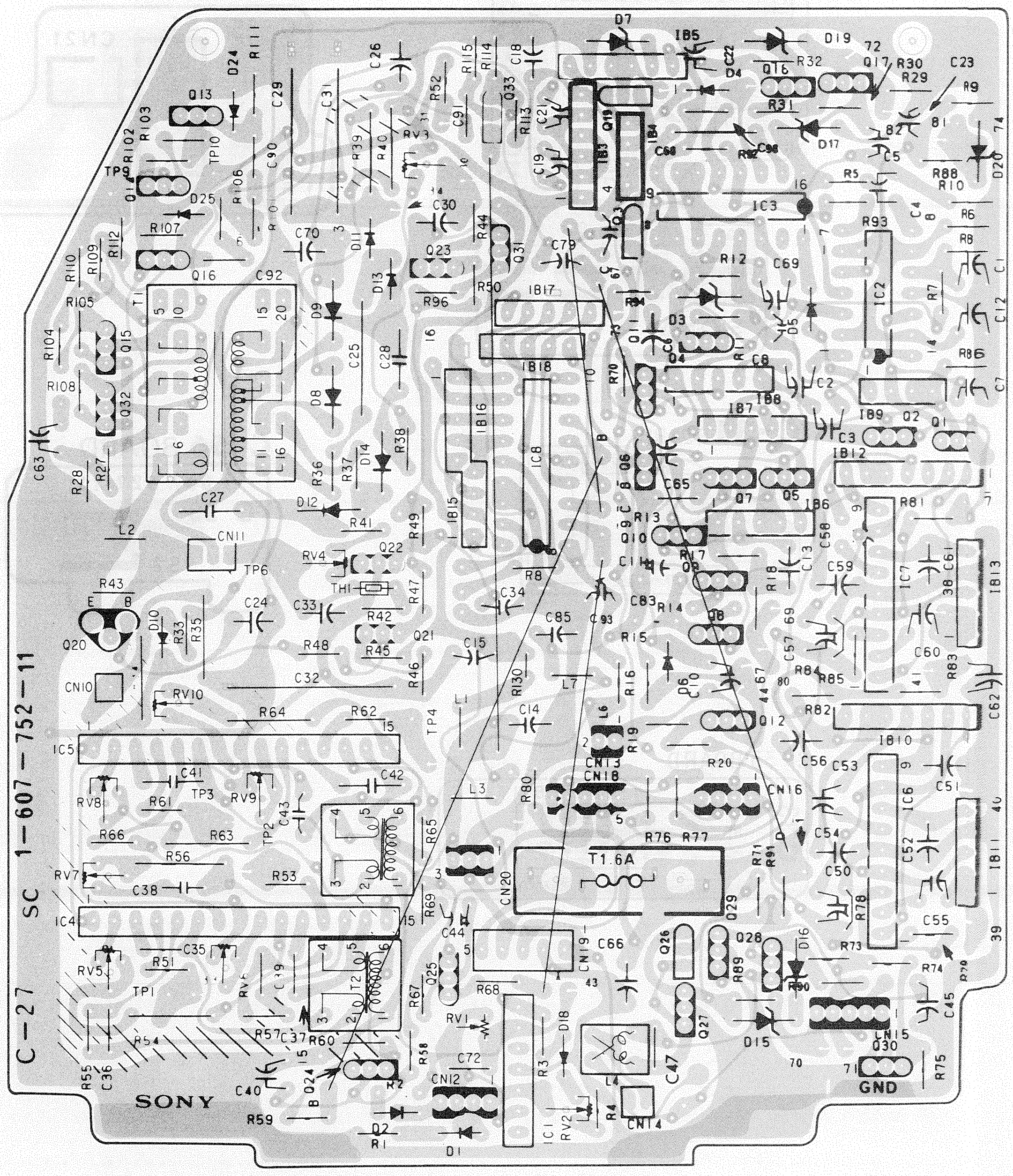

1-607-753-11
C-29
SW
SONY

C-27

— Ref. No. C-27 BOARD: 2000 series —

C-27 BOARD

	A	B	C	
IC,Q	15 32 14 16 20	13 IC5 IC4 22 21 24 23 25 33 31 IC8 IC1	19 3 11 6 4 10 9 8 12 26 27 29 7 18 IC3 5 28 17 IC2	2 1 IC7 IC6 30
D	10	25 24 9 11 8 12 13 14 2 1	18 7 4 6 3 19 17 5 15 16	20
ADJ	RV8 RV7 RV5	RV10 RV6 RV9 RV4 RV3 RV1	RV2	
TP	9 1	10 3 6 2 4		



1
2
3
4
5
D7
IB5
D19
Q17
R30
C23
R32
Q16
D4
C22
R31
R29
R9
D17
D20
IC3
R5
R88
R10
R93
R6
R8
C69
IC2
R12
D3
D5
C8
C2
IB7
IB8
IB9
Q2
Q1
IB12
C3
C65
Q7
Q5
IB6
R81
C58
C59
IC7
IB13
C61
C60
R83
R84
R85
C62
R82
IB10
C56
C53
C51
IC6
CN16
C54
C50
C52
IB11
R78
C55
R73
R74
C45
D16
R90
D15
LN15
Q30
GND
R75
Q29
Q28
Q26
Q27
R89
R71
R91
R76
R77
T1.6A
CN20
CN19
C66
C47
L4
CN14
R4
RV2
IC1
R3
D18
RV1
R68
C72
CN12
D1
D2
R1
R2
R58
R67
Q25
C44
R69
R65
L3
R80
CN13
CN18
R19
R20
L6
Q12
R16
R15
D6
C10
R14
C83
Q8
R18
C13
R17
Q10
C11
R13
Q6
Q9
R70
Q11
C6
Q4
R11
IB18
IB16
IC8
IB15
IB17
R50
Q31
R44
C79
C30
R96
Q23
RV3
R39
R40
C31
C29
C90
R106
R10
D25
R107
Q16
C92
T1
R112
R109
R110
R105
R104
R108
Q15
Q32
C63
R28
R27
L2
C27
D12
R41
R49
CN11
TP6
RV4
Q22
TH1
R47
R43
E
B
Q20
D10
R33
R35
C24
C33
R42
R45
Q21
R48
C34
R8
C85
C93
C15
R46
C32
CN10
RV10
R64
R62
TP4
L1
R130
C14
L7
IC5
C41
C42
TP3
RV9
RV8
R61
C43
TP2
R66
R63
R56
R53
RV7
C38
IC4
C35
RV5
R51
TP1
T2
C19
C37
R57
R60
R54
R55
C36
C40
Q24
R59
SONY
C-27
SC 1-607-752-11
D24
R111
C26
R115
R114
C18
Q33
R113
C91
R52
C21
C19
IB3
Q19
IB4
C68
C98
Q3
Q13
R102
R103
TP9
TP10
Q14
D11
D13
D9
D8
C70
C25
C28
D14
R38
R36
R37

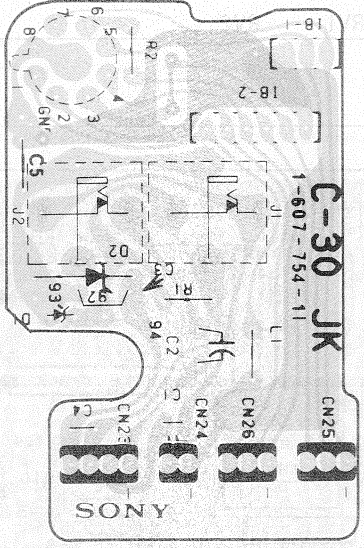
C-30 | C-31 | C-33 | C-55 | C-56

– Ref. No. C-30 BOARD: 2400 series, C-31 BOARD: 2600 series, C-33 BOARD: 3000 series, C-55 BOARD: 3600 series, C-56 BOARD: 5200 series –

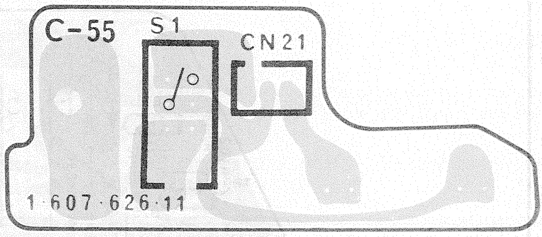
A B C D

1

C-30 BOARD

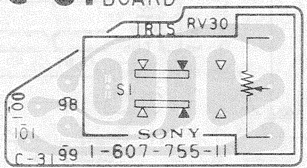

1
2
3
4
5
6
7
8
R2
1B-1
1B-2
GND
C5
J2
J1
D2
93
92
R1
94
C2
L1
C-30 JK
1-607-754-11
C4
CN23
CN24
CN26
CN25
SONY

C-55 BOARD

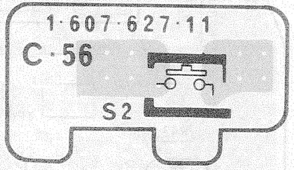

C-55
S1
CN21
1·607·626·11

2

C-31 BOARD

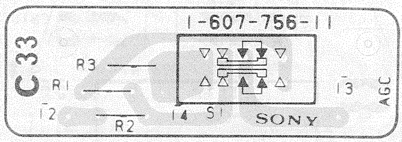

IRIS
RV30
S1
98
100
101
C-31
99
SONY
1-607-755-11

C-56 BOARD


1·607·627·11
C·56
S2

3

C-33 BOARD


1-607-756-11
C 33
R3
R1
12
R2
14
S1
SONY
13
AGC

4

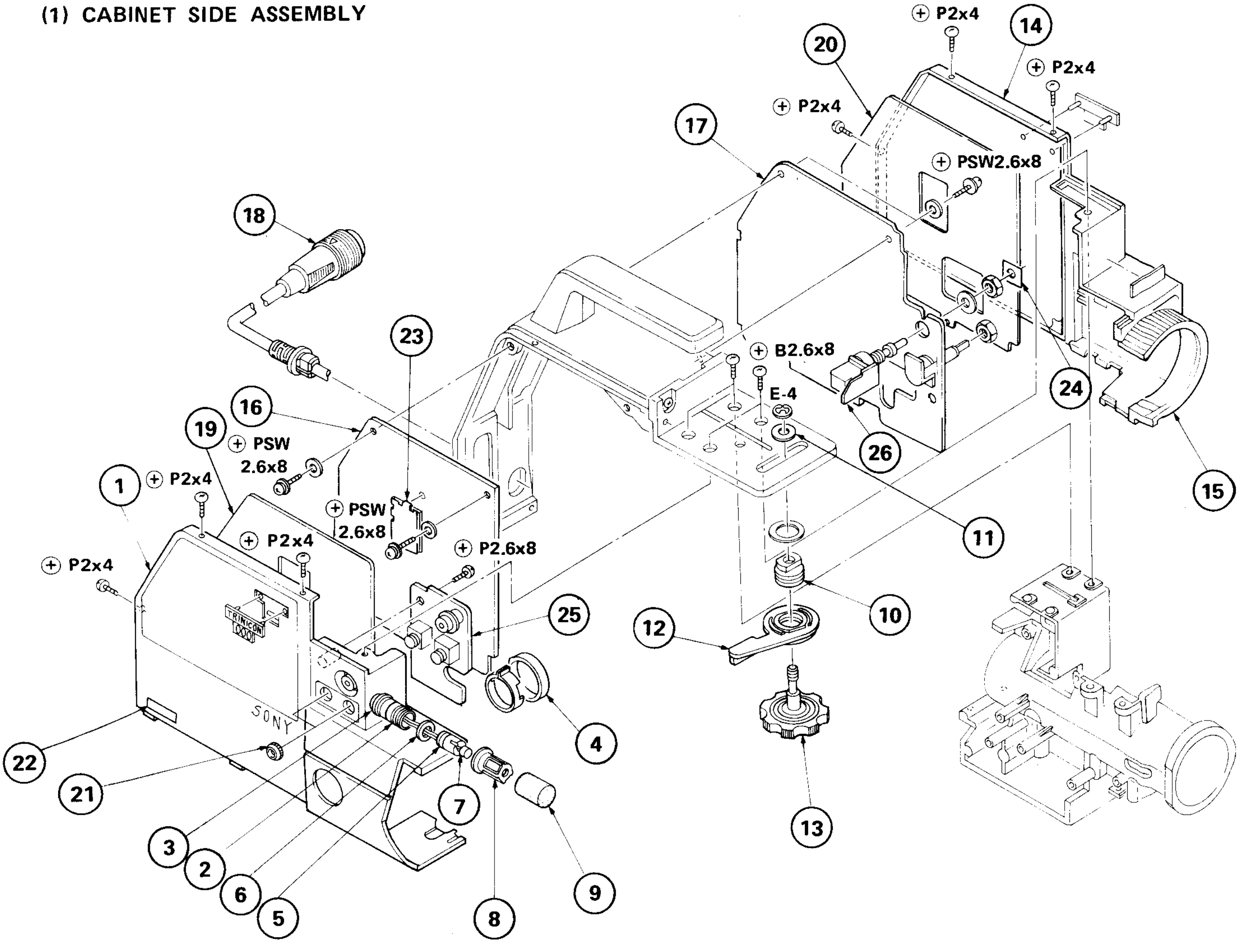
5

SECTION 4
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

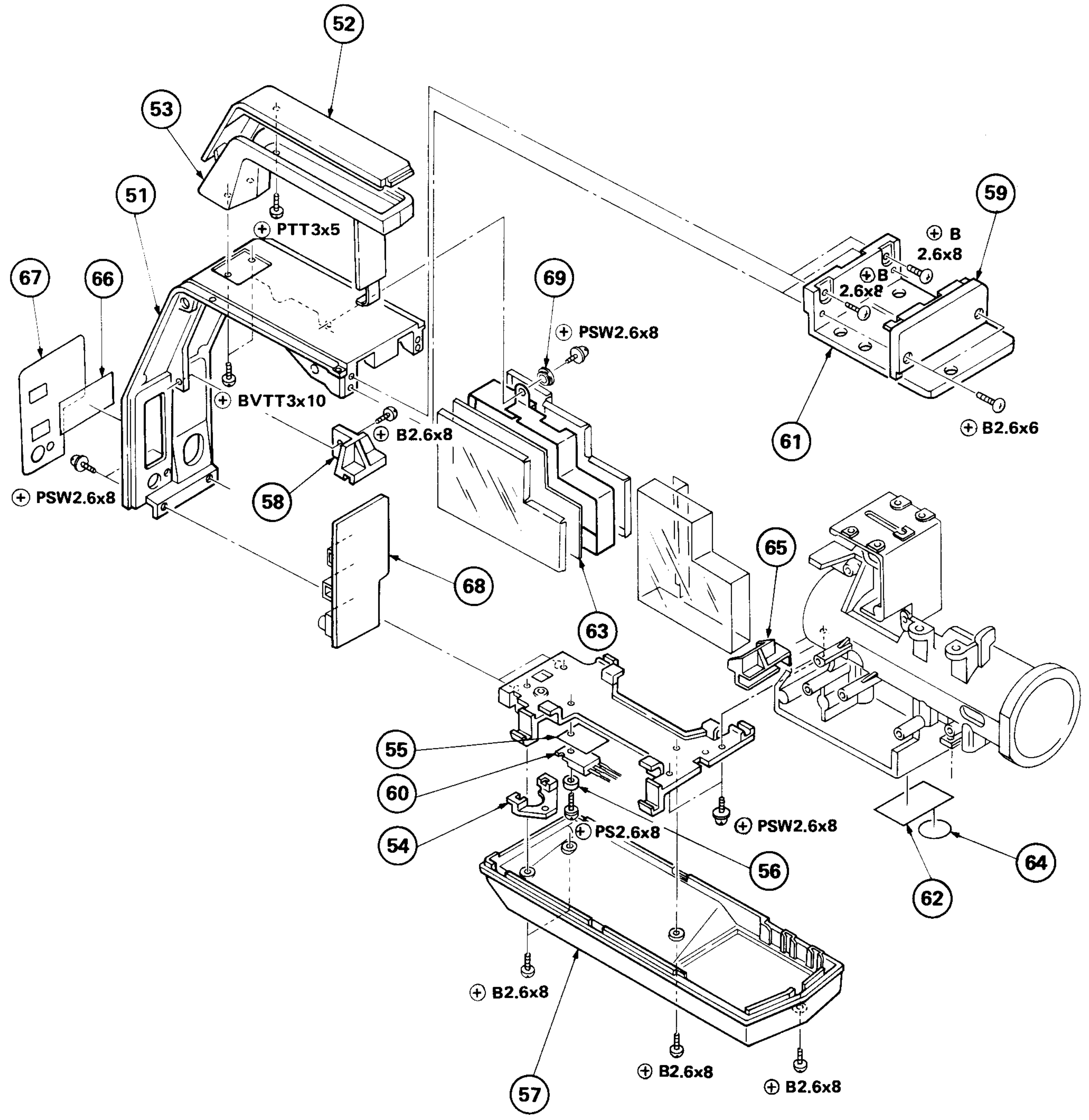
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(1) CABINET SIDE ASSEMBLY



No.	Part No.	Description	Remark
1	X-3670-232-0	CABINET (J) SUB ASSY, SIDE	2,3
2	3-661-974-00	CASE, BUSHING	
3	3-661-975-00	BUSHING	
4	3-670-201-00	BUSHING, REMOTE CONTROL	
5	3-661-976-00	HOLDER, MICROPHONE	
6	3-662-017-00	RING, MICROPHONE	
7	8-814-189-00	MICROPHONE, BUILT-IN (C-1007A)	
8	3-661-973-00	CASE, MICROPHONE	
9	3-661-998-00	SCREEN, MICROPHONE WINDOW	
10	3-662-052-00	SCREW, CLAMP	
11	3-662-048-00	WASHER, BRACKET	
12	X-3661-921-0	LEVER ASSY, LOCK	
13	3-661-959-00	KNOB, VF LOCK	
14	X-3670-233-0	CABINET (C) ASSY, SIDE	15,20
15	3-662-025-00	RING	
16	♠:A-7511-818-A	C-27 BOARD, COMPLETE	
17	♠:A-7511-814-A	C-26 BOARD, COMPLETE	
18	1-555-826-00	CABLE, CONNECTION	
19	♠:3-674-522-00	PLATE (J), SHIELD	
20	♠:3-670-239-00	PLATE (C), SHIELD	
21	1-507-902-XX	JACK NUT B	
22	3-701-690-00	LABEL (UK ONLY)	
23	♠:X-3670-241-0	PLATE (A) ASSY, SHIELD	
24	3-662-069-00	SHEET, ORNAMENTAL	
25	♠:1-607-754-00	C-30 BOARD	
26	♠:1-607-755-00	C-31 BOARD	

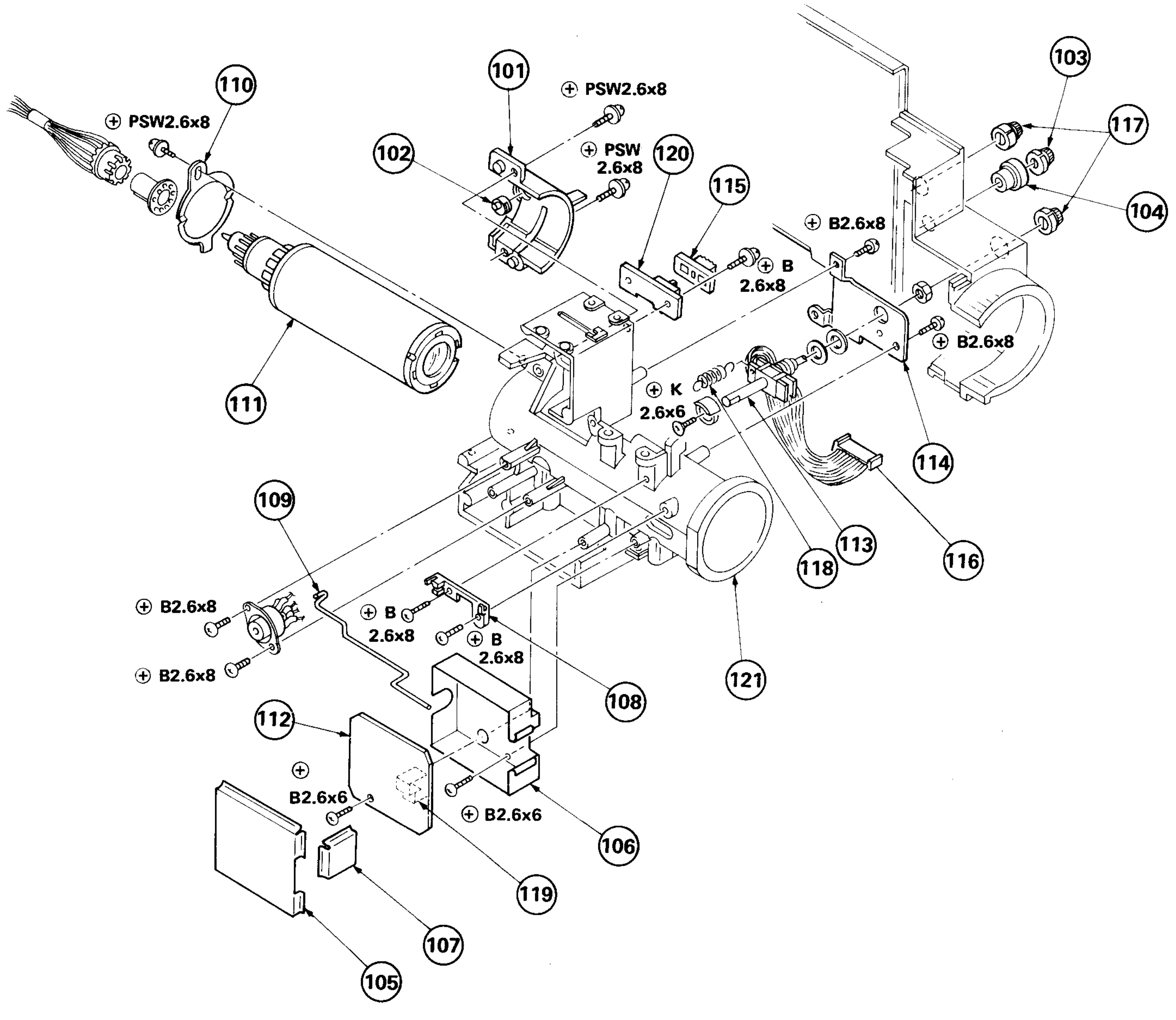
(2) REAR FRAME ASSEMBLY


52
53
51
⊕ PTT3x5
67
66
69
⊕ PSW2.6x8
59
⊕ B 2.6x8
⊕B 2.6x8
⊕ BVTT3x10
⊕ B2.6x8
⊕ PSW2.6x8
58
61
⊕ B2.6x6
68
65
63
55
60
54
⊕ PS2.6x8
⊕ PSW2.6x8
56
64
62
⊕ B2.6x8
⊕ B2.6x8
⊕ B2.6x8
57

No.	Part No.	Description	Remark
51	X-3670-234-0	FRAME ASSY, REAR	52,53
52	3-661-956-00	COVER, HANDY GRIP	
53	3-661-955-00	GRIP, HANDY	
54	♦:3-661-908-00	HOLDER (B), CHASSIS	
55	2-285-809-00	INSULATOR (TO-220)	
56	2-832-007-00	BUSHING (K), INSULATING	
57	3-661-965-00	PAD	
58	♦:3-661-907-00	HOLDER (A), CHASSIS	
59	3-661-954-00	COVER, VF BRACKET	
60	=>8-729-283-42	TRANSISTOR 2SB834	

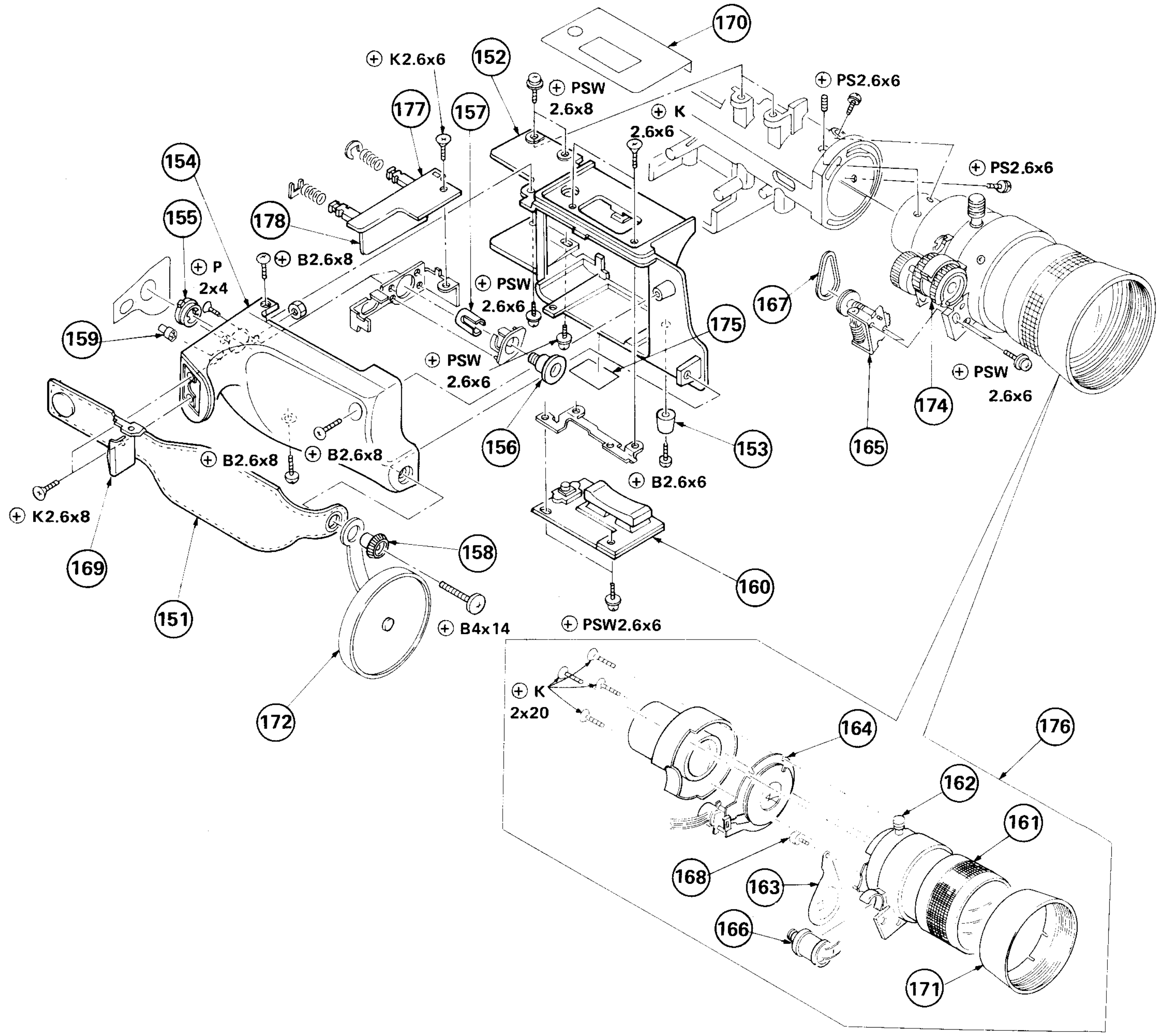
No.	Part No.	Description	Remark
61	3-662-095-00	BRACKET, VF	
62	♦:3-670-295-00	LABEL, MODEL NUMBER	
63	♦:A-7511-820-A	C-28 BOARD, COMPLETE	
64	3-701-940-01	LABEL, BEAB (UK ONLY)	
65	♦:3-670-238-00	RETAINER, SHIELD CASE	
66	3-703-082-21	LABEL, CAUTION	
67	3-670-298-11	PLATE, ORNAMENTAL, REAR	
68	♦:1-607-753-00	C-29 BOARD	
69	3-565-342-00	WASHER (A) (AEP ONLY)	

(3) CHASSIS ASSEMBLY


110
⊕ PSW2.6x8
101
⊕ PSW2.6x8
102
⊕ PSW 2.6x8
120
115
103
117
104
⊕ B2.6x8
⊕ B 2.6x8
⊕ B2.6x8
111
⊕ K 2.6x6
114
109
113
118
116
⊕ B2.6x8
⊕ B 2.6x8
⊕ B 2.6x8
⊕ B2.6x8
121
108
112
⊕ B2.6x6
⊕ B2.6x6
106
119
107
105

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	♠:3-670-215-00	CHASSIS (B), LENS		112	♠:A-7511-656-A	C-3 BOARD, COMPLETE	
102	3-670-206-00	CAM, ADJUSTMENT		113	1-553-805-00	SWITCH, ROTARY (WITH CAM)	
103	X-3670-201-2	KNOB (A) ASSY, CONTROL		114	3-670-225-00	BRACKET, CF SELECTION	
104	X-3670-202-2	KNOB (B) ASSY, CONTROL		115	3-661-916-00	KNOB, AGC SWITCH	
105	♠:3-670-265-00	LID (A), PA SHIELD		116	♠:1-555-908-00	CONNECTOR ASSY (2.0MM) 10P	
106	♠:3-674-506-00	SHIELD (MAIN) (N), PA		117	X-3670-205-2	KNOB (C) ASSY, CONTROL	
107	♠:3-674-507-00	LID (N), SHIELD, PA		118	3-542-476-00	SPRING, TENSION	
108	3-670-211-00	RETAINER, LINK, CF		119	♠:3-674-511-00	PLATE (N), SHIELD	
109	3-670-216-00	BAR, LINK, CF		120	♠:1-607-756-00	C-33 BOARD	
110	♠:3-670-283-00	SPRING		121	♠:X-3670-207-0	CHASSIS (A) ASSY, LENS	
111	8-701-021-33	CT-2133/2123					

(4) CONTROL GRIP ASSEMBLY


170
⊕ K2.6x6
152
⊕ PSW 2.6x8
⊕ PS2.6x6
177
157
⊕ K 2.6x6
154
⊕ PS2.6x6
155
178
⊕ P 2x4
⊕ B2.6x8
⊕ PSW 2.6x6
167
175
159
⊕ PSW 2.6x6
⊕ PSW 2.6x6
174
⊕ B2.6x8
⊕ B2.6x8
156
153
165
⊕ B2.6x6
⊕ K2.6x8
158
169
160
151
⊕ B4x14
⊕ PSW2.6x6
⊕ K 2x20
172
164
176
162
161
168
163
166
171

No.	Part No.	Description	Remark
151	X-3670-218-0	BELT ASSY, GLIP	
152	X-3670-222-0	HOLDER ASSY, GRIP	153,170
153	3-662-014-00	LEG (A)	
154	X-3670-223-0	GRIP SUB ASSY, CONTROL	151,156 155,157,169
155	3-670-213-00	KNOB, LOCK, SS	
156	3-670-212-00	SCREW, FITTING, SWITCH, S.S.	
157	3-670-223-00	KNOB, S.S SWITCH	
158	3-662-013-00	STOPPER, BELT	
159	3-674-513-00	KNOB, FADER SWITCH	
160	A-7520-035-A	SEESAW BOARD, COMPLETE	
161	3-706-573-00	KNURL, RUBBER, FOCUS	
162	3-706-574-00	LEVER ASSY, ZOOM	
163	3-706-575-00	FILTER ASSY, COLOR TEMP CHANGE	
164	3-706-576-00	AUTO IRIS ASSY	
165	2-198-634-11	UNIT, GEAR, ZOOM	
166	3-706-578-02	MOTOR ASSY, ZOOM	
167	3-706-579-00	BELT, MOTOR	
168	3-706-580-00	SHAFT, FILTER	
169	♠:3-670-251-00	NUT, GLIP BELT FASTENING	
170	3-670-227-31	PLATE, INDICATION, ZOOM	
171	3-706-564-00	HOOD	
172	3-706-565-00	CAP, HOOD	
174	3-706-627-00	CASE, MOTOR	
175	3-703-043-00	LABEL, CAUTION, MAIN	
176	1-547-076-00	LENS, ZOOM (VCL-1106YD)	161,162,163 164,166,168,171
177	♠:1-607-626-00	C-55 BOARD	
178	♠:1-607-627-00	C-56 BOARD	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS

- MF : μF, PF : μμF

RESISTORS

- All resistors are in ohms
- F : nonflammable

COILS

- MMH : mH, UH : μH

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description				Remark
	♦:A-7511-656-A	C-3 BOARD, COMPLETE ******************				
	♦:3-661-918-11	PLATE, SHIELD, PA				
		CAPACITOR				
C001	1-108-246-00	MYLAR	0.047MF	10%	50V	
C002	1-131-380-00	TANTALUM	33MF	20%	10V	
C003	1-123-618-00	ELECT	22MF	20%	6.3V	
C004	1-102-521-00	CERAMIC	43PF	5%	50V	
C005	1-108-251-00	MYLAR	0.1MF	10%	50V	
C006	1-123-647-00	ELECT	47MF	20%	6.3V	
C007	1-123-607-00	ELECT	0.1MF	20%	50V	
C008	1-131-380-00	TANTALUM	33MF	20%	10V	
		CONNECTOR				
CN001	♦:1-555-921-00	CONNECTOR ASSY (2.0MM) 4P				
CN011	♦:1-555-927-00	CONNECTOR ASSY (2.0MM) 3P				
		TRIMMER				
CT001	1-141-245-00	TRIMMER, CERAMIC 30P				
		COIL				
L001	1-408-323-00	COIL, FERRITE				
L002	1-407-177-XX	MICRO INDUCTOR 470UH				
L003	1-407-173-XX	MICRO INDUCTOR 220UH				
L004	1-407-173-XX	MICRO INDUCTOR 220UH				
		TRANSISTOR				
Q001	8-765-423-00	TRANSISTOR 2SK152-3				
Q002	8-729-204-82	TRANSISTOR 2SA1048				
Q003	8-729-245-83	TRANSISTOR 2SC2458				
Q004	8-729-204-82	TRANSISTOR 2SA1048				
Q005	8-729-245-83	TRANSISTOR 2SC2458				
		RESISTOR				
R001	1-208-259-00	RES, MICRO (HIGH MEGA OHM) 10M				
R002	1-214-971-00	METAL	2M	1%	1/4W	
R003	1-246-836-00	CARBON	240		1/8W	
R004	1-246-785-00	CARBON	1.5K		1/8W	
R005	1-246-797-00	CARBON	15K		1/8W	
R006	1-246-860-00	CARBON	24K		1/8W	
R007	1-246-785-00	CARBON	1.5K		1/8W	
R008	1-246-771-00	CARBON	100		1/8W	
R009	1-246-845-00	CARBON	1.3K		1/8W	
R010	1-246-771-00	CARBON	100		1/8W	
R011	1-246-488-00	CARBON	4.3K	5%	1/4W	
R012	1-246-521-00	CARBON	100K	5%	1/4W	
R013	1-246-792-00	CARBON	5.6K		1/8W	
		TRANSFORMER				
T001	1-437-086-00	TRANSFORMER, DRIVE: VDT				

Ref.No.	Part No.	Description				Remark
	♦:A-7511-814-A	C-26 BOARD, COMPLETE ********************				
	3-509-140-00	HOLDER, WIRE				
		CAPACITOR				
C001	1-131-381-00	TANTALUM	47MF	20%	10V	
C002	1-131-387-00	TANTALUM	47MF	20%	6.3V	
C003	1-123-661-00	ELECT	100MF	20%	6.3V	
C004	1-123-607-00	ELECT	0.1MF	20%	50V	
C005	1-123-647-00	ELECT	47MF	20%	6.3V	
C006	1-123-617-00	ELECT	10MF	20%	16V	
C012	1-123-614-51	ELECT	3.3MF	20%	35V	
C013	1-123-611-00	ELECT	1MF	20%	50V	
C015	1-123-622-00	ELECT	22MF	20%	16V	
C016	1-123-617-00	ELECT	10MF	20%	16V	
C018	1-123-296-00	ELECT	220MF	20%	6.3V	
C019	1-123-607-00	ELECT	0.1MF	20%	50V	
C020	1-161-005-00	CERAMIC	0.0022MF	10%	25V	
C021	1-123-607-00	ELECT	0.1MF	20%	50V	
C022	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C023	1-123-645-00	ELECT	33MF	20%	10V	
C024	1-123-647-00	ELECT	47MF	20%	6.3V	
C027	1-123-306-00	ELECT	47MF	20%	10V	
C028	1-123-617-00	ELECT	10MF	20%	16V	
C029	1-123-617-00	ELECT	10MF	20%	16V	
C030	1-123-308-00	ELECT	220MF	20%	10V	
C031	1-123-617-00	ELECT	10MF	20%	16V	
C032	1-123-645-00	ELECT	33MF	20%	10V	
C033	1-123-645-00	ELECT	33MF	20%	10V	
C034	1-102-523-00	CERAMIC	56PF	5%	50V	
C035	1-123-617-00	ELECT	10MF	20%	16V	
C036	1-123-645-00	ELECT	33MF	20%	10V	
C037	1-102-524-00	CERAMIC	62PF	5%	50V	
C038	1-123-645-00	ELECT	33MF	20%	10V	
C039	1-123-617-00	ELECT	10MF	20%	16V	
C040	1-123-607-00	ELECT	0.1MF	20%	50V	
C041	1-123-645-00	ELECT	33MF	20%	10V	
C042	1-123-645-00	ELECT	33MF	20%	10V	
C043	1-123-617-00	ELECT	10MF	20%	16V	
C044	1-123-296-00	ELECT	220MF	20%	6.3V	
C045	1-123-617-00	ELECT	10MF	20%	16V	
C046	1-123-617-00	ELECT	10MF	20%	16V	
C047	1-123-645-00	ELECT	33MF	20%	10V	
C048	1-102-971-00	CERAMIC	82PF	5%	50V	
C049	1-102-971-00	CERAMIC	82PF	5%	50V	
C050	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C051	1-102-973-00	CERAMIC	100PF	5%	50V	
C054	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C055	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C056	1-102-529-00	CERAMIC	100PF	5%	50V	
C058	1-102-524-00	CERAMIC	62PF	5%	50V	
C059	1-123-617-00	ELECT	10MF	20%	16V	

C-26

Ref.No.	Part No.	Description			Remark
C060	1-123-645-00	ELECT	33MF	20%	10V
C063	1-123-661-00	ELECT	100MF	20%	6.3V
C065	1-123-617-00	ELECT	10MF	20%	16V
C066	1-123-607-00	ELECT	0.1MF	20%	50V
C067	1-131-371-00	TANTALUM	10MF	20%	16V
C068	1-123-607-00	ELECT	0.1MF	20%	50V
C069	1-131-371-00	TANTALUM	10MF	20%	16V
C070	1-102-517-00	CERAMIC	30PF	5%	50V
C071	1-161-013-00	CERAMIC	0.01MF	10%	25V
C072	1-123-617-00	ELECT	10MF	20%	16V
C073	1-123-617-00	ELECT	10MF	20%	16V
C074	1-161-039-00	CERAMIC	0.001MF	10%	25V
C075	1-102-519-00	CERAMIC	36PF	5%	50V
C076	1-161-039-00	CERAMIC	0.001MF	10%	25V
C077	1-161-021-00	CERAMIC	0.047MF	10%	25V
C078	1-161-039-00	CERAMIC	0.001MF	10%	25V
C079	1-102-519-00	CERAMIC	36PF	5%	50V
C081	1-102-518-00	CERAMIC	33PF	5%	50V
C082	1-161-039-00	CERAMIC	0.001MF	10%	25V
C083	1-161-039-00	CERAMIC	0.001MF	10%	25V
C084	1-123-617-00	ELECT	10MF	20%	16V
C085	1-130-509-51	MYLAR	0.0027MF	10%	50V
C086	1-131-347-00	TANTALUM	1MF	20%	35V
C088	1-123-617-00	ELECT	10MF	20%	16V
C089	1-123-645-00	ELECT	33MF	20%	10V
C090	1-123-611-00	ELECT	1MF	20%	50V
C091	1-123-617-00	ELECT	10MF	20%	16V
C092	1-161-021-00	CERAMIC	0.047MF	10%	25V
C094	1-161-021-00	CERAMIC	0.047MF	10%	25V
C095	1-161-021-00	CERAMIC	0.047MF	10%	25V
C099	1-131-371-00	TANTALUM	10MF	20%	16V
C104	1-102-518-00	CERAMIC	33PF	5%	50V
C105	1-161-013-00	CERAMIC	0.01MF	10%	25V
C107	1-101-974-00	CERAMIC	20PF	5%	50V
C108	1-102-517-00	CERAMIC	30PF	5%	50V
C109	1-161-013-00	CERAMIC	0.01MF	10%	25V
C110	1-102-530-00	CERAMIC	120PF	5%	50V
C111	1-102-530-00	CERAMIC	120PF	5%	50V
C112	1-161-039-00	CERAMIC	0.001MF	10%	25V
C113	1-123-617-00	ELECT	10MF	20%	16V
C120	1-131-381-00	TANTALUM	47MF	20%	10V
C121	1-131-381-00	TANTALUM	47MF	20%	10V
C122	1-161-021-00	CERAMIC	0.047MF	10%	25V
C123	1-161-039-00	CERAMIC	0.001MF	10%	25V
C124	1-161-021-00	CERAMIC	0.047MF	10%	25V
C150	1-123-607-00	ELECT	0.1MF	20%	50V
C151	1-123-607-00	ELECT	0.1MF	20%	50V
C152	1-123-617-00	ELECT	10MF	20%	16V
C153	1-123-611-00	ELECT	1MF	20%	50V
C154	1-123-616-00	ELECT	4.7MF	20%	25V
C155	1-123-617-00	ELECT	10MF	20%	16V
C156	1-102-966-00	CERAMIC	43PF	5%	50V
C157	1-123-617-00	ELECT	10MF	20%	16V

Ref.No.	Part No.	Description			Remark
C163	1-123-661-00	ELECT	100MF	20%	6.3V

CONNECTOR

CN001 ●:	1-560-467-00	PIN, CONNECTOR 4P
CN002 ●:	1-560-466-00	PIN, CONNECTOR 3P
CN003 ●:	1-560-467-00	PIN, CONNECTOR 4P
CN004	1-508-900-00	CONNECTOR (M) 2P
CN005 ●:	1-560-469-00	PIN, CONNECTOR 6P
CN006 ●:	1-560-456-00	PIN, CONNECTOR 2P
CN007 ●:	1-508-797-00	PIN, CONNECTOR 4P
CN008 ●:	1-560-471-00	PIN, CONNECTOR 10P
CN009 ●:	1-551-720-00	CONNECTOR (2.5MM) 3P
CN022 ●:	1-555-918-00	CONNECTOR ASSY (2.0MM) 5P
CN026 ●:	1-555-925-51	CONNECTOR ASSY (2.0MM) 3P

DIODE

D001	8-719-911-19	DIODE 1SS119
D005	8-719-911-19	DIODE 1SS119
D006	8-719-911-19	DIODE 1SS119
D007	8-719-911-19	DIODE 1SS119
D010	8-719-911-19	DIODE 1SS119
D013	8-719-911-19	DIODE 1SS119
D014	8-719-911-19	DIODE 1SS119
D015 =>	8-719-100-65	DIODE RD12E-B2
D016	8-719-911-19	DIODE 1SS119
D020	8-719-911-19	DIODE 1SS119
D021	8-719-911-19	DIODE 1SS119

DELAY LINE

DL001	1-415-239-00	DELAY LINE
DL002	1-415-252-00	DELAY LINE
DL003	1-415-217-00	DELAY LINE

FILTER

FL001	1-231-344-00	FILTER, TRAP

IC

IC001	8-759-920-02	IC CX10002
IC002	8-759-132-40	IC UPC324C
IC003	8-758-960-00	IC CX-896
IC004	8-758-150-00	IC CX-815
IC005	8-758-140-00	IC CX-814
IC006	8-752-000-30	IC CX20003
IC007	8-758-160-00	IC CX-816
IC008	8-759-608-11	IC CX-811
IC009	8-752-201-70	IC CX22017
IC010	8-758-950-00	IC CX-895
IC012	8-759-905-85	IC CX10018

COIL

L002	1-408-459-11	MICRO INDUCTOR 270UH

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
L003	1-408-462-11	MICRO INDUCTOR 470UH	
L004	1-408-446-11	MICRO INDUCTOR 22UH	
L005	1-408-446-11	MICRO INDUCTOR 22UH	
L006	1-408-443-11	MICRO INDUCTOR 12UH	
L008	1-407-921-00	MICRO INDUCTOR 8.2UH	
L009	1-407-927-00	COIL, VAR 10UH	
L010	1-408-020-00	MICRO INDUCTOR 68UH	
L011	1-408-437-11	MICRO INDUCTOR 3.9UH	
L012	1-407-921-00	MICRO INDUCTOR 8.2UH	
L015	1-408-462-11	MICRO INDUCTOR 470UH	
L017	1-408-584-00	MICRO INDUCTOR 27UH	
L018	1-407-933-00	MICRO INDUCTOR 39UH	
		LPF	
LP001	1-231-666-00	LPF	
LP002	1-231-666-00	LPF	
LP003	1-231-666-00	LPF	
		TRANSISTOR	
Q001	8-729-245-83	TRANSISTOR 2SC2458	
Q002	8-729-245-83	TRANSISTOR 2SC2458	
Q003	8-729-204-82	TRANSISTOR 2SA1048	
Q008	8-729-245-83	TRANSISTOR 2SC2458	
Q009	8-729-245-83	TRANSISTOR 2SC2458	
Q010	8-729-204-82	TRANSISTOR 2SA1048	
Q011	8-729-245-83	TRANSISTOR 2SC2458	
Q012	8-729-204-82	TRANSISTOR 2SA1048	
Q013	8-729-177-32	TRANSISTOR 2SD773	
Q014	8-729-245-83	TRANSISTOR 2SC2458	
Q015	8-729-204-82	TRANSISTOR 2SA1048	
Q016	8-729-245-83	TRANSISTOR 2SC2458	
Q017	8-729-204-82	TRANSISTOR 2SA1048	
Q018	8-729-245-83	TRANSISTOR 2SC2458	
Q019	8-729-245-83	TRANSISTOR 2SC2458	
Q020	8-729-245-83	TRANSISTOR 2SC2458	
Q021	8-729-245-83	TRANSISTOR 2SC2458	
Q022	8-729-245-83	TRANSISTOR 2SC2458	
Q023	8-729-245-83	TRANSISTOR 2SC2458	
Q024	8-729-245-83	TRANSISTOR 2SC2458	
Q025	8-729-245-83	TRANSISTOR 2SC2458	
Q026	8-729-245-83	TRANSISTOR 2SC2458	
Q027	8-729-204-82	TRANSISTOR 2SA1048	
Q028	8-729-245-83	TRANSISTOR 2SC2458	
Q033	8-729-115-30	TRANSISTOR 2SK105A-30	
Q034	8-729-204-82	TRANSISTOR 2SA1048	
Q035	8-729-245-83	TRANSISTOR 2SC2458	
Q036	8-729-204-82	TRANSISTOR 2SA1048	
Q040	8-729-204-82	TRANSISTOR 2SA1048	
Q041	8-729-204-82	TRANSISTOR 2SA1048	
Q042	8-729-245-83	TRANSISTOR 2SC2458	
Q043	8-729-245-83	TRANSISTOR 2SC2458	
Q044	8-729-204-82	TRANSISTOR 2SA1048	
Q045	8-729-245-83	TRANSISTOR 2SC2458	

Ref.No.	Part No.	Description				Remark
		RESISTOR				
R001	1-246-809-00	CARBON	150K		1/8W	
R003	1-246-786-00	CARBON	1.8K		1/8W	
R005	1-247-053-00	CARBON	1M		1/8W	
R007	1-246-786-00	CARBON	1.8K		1/8W	
R008	1-246-785-00	CARBON	1.5K		1/8W	
R009	1-246-795-00	CARBON	10K		1/8W	
R010	1-246-795-00	CARBON	10K		1/8W	
R013	1-246-798-00	CARBON	18K		1/8W	
R024	1-214-166-00	METAL	27K	1%	1/4W	
R025	1-246-807-00	CARBON	100K		1/8W	
R026	1-246-789-00	CARBON	3.3K		1/8W	
R027	1-247-060-00	CARBON	750K		1/8W	
R028	1-247-058-00	CARBON	510K		1/8W	
R029	1-246-859-00	CARBON	20K		1/8W	
R030	1-246-852-00	CARBON	5.1K		1/8W	
R031	1-246-863-00	CARBON	43K		1/8W	
R034	1-246-791-00	CARBON	4.7K		1/8W	
R037	1-246-852-00	CARBON	5.1K		1/8W	
R038	1-246-784-00	CARBON	1.2K		1/8W	
R039	1-214-121-00	METAL	360	1%	1/4W	
R040	1-214-152-00	METAL	6.8K	1%	1/4W	
R041	1-214-162-00	METAL	18K	1%	1/4W	
R042	1-214-157-00	METAL	11K	1%	1/4W	
R043	1-246-791-00	CARBON	4.7K		1/8W	
R044	1-246-864-00	CARBON	51K		1/8W	
R045	1-246-795-00	CARBON	10K		1/8W	
R046	1-246-798-00	CARBON	18K		1/8W	
R047	1-246-795-00	CARBON	10K		1/8W	
R049	1-246-848-00	CARBON	2.4K		1/8W	
R050	1-246-795-00	CARBON	10K		1/8W	
R051	1-246-797-00	CARBON	15K		1/8W	
R052	1-246-852-00	CARBON	5.1K		1/8W	
R053	1-246-783-00	CARBON	1K		1/8W	
R054	1-215-227-00	RESISTOR 5.1K				
R055	1-246-778-00	CARBON	390		1/8W	
R057	1-246-783-00	CARBON	1K		1/8W	
R058	1-246-781-00	CARBON	680		1/8W	
R059	1-246-795-00	CARBON	10K		1/8W	
R060	1-246-795-00	CARBON	10K		1/8W	
R061	1-246-783-00	CARBON	1K		1/8W	
R062	1-246-791-00	CARBON	4.7K		1/8W	
R063	1-246-805-00	CARBON	68K		1/8W	
R064	1-246-851-00	CARBON	4.3K		1/8W	
R067	1-215-227-00	RESISTOR 5.1K				
R068	1-246-788-00	CARBON	2.7K		1/8W	
R069	1-246-777-00	CARBON	330		1/8W	
R070	1-246-862-00	CARBON	36K		1/8W	
R071	1-246-787-00	CARBON	2.2K		1/8W	
R072	1-246-797-00	CARBON	15K		1/8W	
R073	1-246-854-00	CARBON	7.5K		1/8W	
R075	1-246-781-00	CARBON	680		1/8W	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description				Remark
R077	1-246-849-00	CARBON	3K		1/8W	
R080	1-246-795-00	CARBON	10K		1/8W	
R081	1-246-795-00	CARBON	10K		1/8W	
R087	1-246-786-00	CARBON	1.8K		1/8W	
R088	1-246-780-00	CARBON	560		1/8W	
R089	1-246-771-00	CARBON	100		1/8W	
R090	1-246-793-00	CARBON	6.8K		1/8W	
R092	1-246-778-00	CARBON	390		1/8W	
R095	1-246-774-00	CARBON	180		1/8W	
R097	1-246-778-00	CARBON	390		1/8W	
R101	1-246-786-00	CARBON	1.8K		1/8W	
R102	1-246-786-00	CARBON	1.8K		1/8W	
R103	1-246-859-00	CARBON	20K		1/8W	
R104	1-246-787-00	CARBON	2.2K		1/8W	
R106	1-246-801-00	CARBON	33K		1/8W	
R110	1-246-785-00	CARBON	1.5K		1/8W	
R111	1-246-787-00	CARBON	2.2K		1/8W	
R113	1-246-785-00	CARBON	1.5K		1/8W	
R118	1-246-855-00	CARBON	9.1K		1/8W	
R119	1-246-775-00	CARBON	220		1/8W	
R120	1-246-775-00	CARBON	220		1/8W	
R121	1-246-836-00	CARBON	240		1/8W	
R122	1-246-783-00	CARBON	1K		1/8W	
R123	1-246-852-00	CARBON	5.1K		1/8W	
R124	1-246-847-00	CARBON	2K		1/8W	
R125	1-246-854-00	CARBON	7.5K		1/8W	
R126	1-246-857-00	CARBON	13K		1/8W	
R127	1-246-783-00	CARBON	1K		1/8W	
R135	1-246-783-00	CARBON	1K		1/8W	
R136	1-246-852-00	CARBON	5.1K		1/8W	
R137	1-214-669-00	METAL	3.3	1%	1/4W	
R142	1-246-783-00	CARBON	1K		1/8W	
R143	1-247-049-00	CARBON	470K		1/8W	
R144	1-246-854-00	CARBON	7.5K		1/8W	
R146	1-247-053-00	CARBON	1M		1/8W	
R147	1-246-787-00	CARBON	2.2K		1/8W	
R157	1-246-803-00	CARBON	47K		1/8W	
R158	1-246-789-00	CARBON	3.3K		1/8W	
R159	1-246-791-00	CARBON	4.7K		1/8W	
R160	1-246-789-00	CARBON	3.3K		1/8W	
R161	1-246-796-00	CARBON	12K		1/8W	
R162	1-246-793-00	CARBON	6.8K		1/8W	
R163	1-246-779-00	CARBON	470		1/8W	
R164	1-246-779-00	CARBON	470		1/8W	
R166	1-246-785-00	CARBON	1.5K		1/8W	
R167	1-246-787-00	CARBON	2.2K		1/8W	
R175	1-246-795-00	CARBON	10K		1/8W	
R177	1-246-807-00	CARBON	100K		1/8W	
R178	1-246-864-00	CARBON	51K		1/8W	
R180	1-246-795-00	CARBON	10K		1/8W	
R181	1-246-860-00	CARBON	24K		1/8W	
R185	1-246-859-00	CARBON	20K		1/8W	
R186	1-246-787-00	CARBON	2.2K		1/8W	
R187	1-246-799-00	CARBON	22K		1/8W	
R188	1-246-778-00	CARBON	390		1/8W	
R190	1-246-835-00	CARBON	200		1/8W	
R191	1-246-837-00	CARBON	300		1/8W	
R192	1-246-782-00	CARBON	820		1/8W	
R193	1-246-800-00	CARBON	27K		1/8W	
R194	1-246-800-00	CARBON	27K		1/8W	
R195	1-246-795-00	CARBON	10K		1/8W	
R196	1-246-783-00	CARBON	1K		1/8W	

VARIABLE RESISTOR

RV001	1-226-709-00	RES, ADJ, SOLID 4.7K
RV002	1-226-753-00	RES, ADJ, SOLID 47K
RV004	1-226-710-00	RES, ADJ, SOLID 10K
RV006	1-228-348-00	RES, VAR, CARBON 3K/10K
RV007	1-226-709-00	RES, ADJ, SOLID 4.7K
RV008	1-226-753-00	RES, ADJ, SOLID 47K
RV009	1-226-709-00	RES, ADJ, SOLID 4.7K
RV010	1-224-550-21	RES, ADJ, METAL GLAZE 220
RV011	1-226-710-00	RES, ADJ, SOLID 10K
RV012	1-226-710-00	RES, ADJ, SOLID 10K
RV013	1-226-708-00	RES, ADJ, SOLID 2.2K
RV014	1-226-706-00	RES, ADJ, SOLID 470
RV016	1-226-708-00	RES, ADJ, SOLID 2.2K
RV017	1-226-709-00	RES, ADJ, SOLID 4.7K
RV018	1-226-708-00	RES, ADJ, SOLID 2.2K
RV019	1-226-753-00	RES, ADJ, SOLID 47K
RV020	1-226-711-00	RES, ADJ, SOLID 22K
RV021	1-226-708-00	RES, ADJ, SOLID 2.2K
RV022	1-226-710-00	RES, ADJ, SOLID 10K
RV023	1-226-710-00	RES, ADJ, SOLID 10K
RV024	1-226-708-00	RES, ADJ, SOLID 2.2K
RV025	1-226-708-00	RES, ADJ, SOLID 2.2K
RV026	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K
RV027	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K
RV028	1-226-710-00	RES, ADJ, SOLID 10K
RV030	1-226-753-00	RES, ADJ, SOLID 47K
RV031	1-226-713-00	RES, ADJ, SOLID 100K
RV032	1-226-709-00	RES, ADJ, SOLID 4.7K
RV035	1-226-713-00	RES, ADJ, SOLID 100K
RV036	1-226-711-00	RES, ADJ, SOLID 22K
RV037	1-226-710-00	RES, ADJ, SOLID 10K
RV040	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K
RV041	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K
RV042	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K

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⚠:A-7511-818-A C-27 BOARD, COMPLETE
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⚠:1-533-087-00 HOLDER, FUSE

When indicating parts by reference number, please include the board name.

CAPACITOR

Ref.No.	Part No.	Description			Remark
C001	1-123-614-51	ELECT	3.3MF	20%	35V
C002	1-123-612-00	ELECT	2.2MF	20%	50V
C003	1-123-612-00	ELECT	2.2MF	20%	50V
C004	1-123-617-00	ELECT	10MF	20%	16V
C005	1-123-609-00	ELECT	0.33MF	20%	50V
C006	1-123-644-00	ELECT	22MF	20%	10V
C007	1-123-644-00	ELECT	22MF	20%	10V
C008	1-123-617-00	ELECT	10MF	20%	16V
C010	1-123-607-00	ELECT	0.1MF	20%	50V
C011	1-123-647-00	ELECT	47MF	20%	6.3V
C012	1-123-607-00	ELECT	0.1MF	20%	50V
C013	1-123-318-00	ELECT	33MF	20%	16V
C014	1-123-308-00	ELECT	220MF	20%	10V
C015	1-123-308-00	ELECT	220MF	20%	10V
C018	1-123-382-00	ELECT	22MF	20%	35V
C019	1-123-617-00	ELECT	10MF	20%	16V
C021	1-123-617-00	ELECT	10MF	20%	16V
C022	1-123-618-00	ELECT	22MF	20%	6.3V
C023	1-123-610-00	ELECT	0.47MF	20%	50V
C024	1-121-999-00	ELECT	10MF		160V
C025	1-110-053-00	MYLAR	0.1MF	10%	400V
C026	1-123-308-00	ELECT	220MF	20%	10V
C027	1-108-427-00	MYLAR	0.033MF	10%	200V
C028	1-108-427-00	MYLAR	0.033MF	10%	200V
C029	1-130-459-00	MYLAR	0.1MF	10%	630V
C030	1-123-383-00	ELECT	4.7MF	20%	100V
C031	1-130-459-00	MYLAR	0.1MF	10%	630V
C032	1-130-459-00	MYLAR	0.1MF	10%	630V
C033	1-123-380-00	ELECT	1MF	20%	100V
C034	1-123-306-00	ELECT	47MF	20%	10V
C035	1-107-036-00	MICA	68PF	5%	500V
C036	1-102-965-00	CERAMIC	39PF	10%	50V
C037	1-107-036-00	MICA	68PF	5%	500V
C038	1-108-421-00	MYLAR	0.01MF	10%	200V
C039	1-102-965-00	CERAMIC	39PF	10%	50V
C040	1-123-617-00	ELECT	10MF	20%	16V
C041	1-108-427-00	MYLAR	0.033MF	5%	200V
C042	1-108-427-00	MYLAR	0.033MF	5%	200V
C043	1-108-425-00	MYLAR	0.022MF	5%	200V
C044	1-123-306-00	ELECT	47MF	20%	10V
C045	1-123-332-00	ELECT	47MF	20%	16V
C047	1-161-013-00	CERAMIC	0.01MF	10%	25V
C050	1-123-617-00	ELECT	10MF	20%	16V
C051	1-123-333-00	ELECT	100MF	20%	16V
C052	1-123-661-00	ELECT	100MF	20%	6.3V
C053	1-123-617-00	ELECT	10MF	20%	16V
C054	1-123-318-00	ELECT	33MF	20%	16V
C055	1-123-609-00	ELECT	0.33MF	20%	50V
C056	1-123-333-00	ELECT	100MF	20%	16V
C057	1-123-617-00	ELECT	10MF	20%	16V
C058	1-123-617-00	ELECT	10MF	20%	16V
C059	1-123-318-00	ELECT	33MF	20%	16V
C060	1-123-609-00	ELECT	0.33MF	20%	50V
C061	1-123-661-00	ELECT	100MF	20%	6.3V
C062	1-123-617-00	ELECT	10MF	20%	16V
C063	1-123-617-00	ELECT	10MF	20%	16V
C065	1-123-611-00	ELECT	1MF	20%	50V
C066	1-123-323-00	ELECT	470MF	20%	16V
C067	1-123-620-00	ELECT	10MF	20%	35V
C068	1-161-021-00	CERAMIC	0.047MF	10%	25V
C069	1-123-607-00	ELECT	0.1MF	20%	50V
C070	1-131-387-00	TANTALUM	47MF	20%	6.3V
C072	1-161-013-00	CERAMIC	0.01MF	10%	25V
C079	1-123-307-00	ELECT	100MF	20%	10V
C090	1-161-013-00	CERAMIC	0.01MF	10%	25V
C091	1-161-021-00	CERAMIC	0.047MF	10%	25V
C092	1-161-013-00	CERAMIC	0.01MF	10%	25V
C093	1-123-645-00	ELECT	33MF	20%	10V
C098	1-161-013-00	CERAMIC	0.01MF	10%	25V

CONNECTOR

Ref.No.	Part No.	Description
CN011	♠:1-560-466-00	PIN, CONNECTOR 3P
CN012	♠:1-560-467-00	PIN, CONNECTOR 4P
CN013	♠:1-560-456-00	PIN, CONNECTOR 2P
CN014	♠:1-560-456-00	PIN, CONNECTOR 2P
CN015	♠:1-560-468-00	PIN, CONNECTOR 5P
CN016	♠:1-560-467-00	PIN, CONNECTOR 4P
CN018	♠:1-560-468-00	PIN, CONNECTOR 5P
CN019	♠:1-508-743-00	PIN, CONNECTOR 5P
CN020	♠:1-560-466-00	PIN, CONNECTOR 3P
CN021	♠:1-555-929-00	CONNECTOR ASSY (2.0MM) 3P
CN023	♠:1-555-920-00	CONNECTOR ASSY (2.0MM) 4P
CN025	♠:1-555-925-61	CONNECTOR ASSY (2.0MM) 3P
CN027	♠:1-555-827-41	SOCKET CONNECTOR, VIDICON
CN028	1-561-718-00	SOCKET, DIN 8P

DIODE

Ref.No.	Part No.	Description
D001	8-719-911-19	DIODE 1SS119
D002	8-719-911-19	DIODE 1SS119
D003	=>8-719-100-65	DIODE RD12E-B2
D004	8-719-911-19	DIODE 1SS119
D005	8-719-911-19	DIODE 1SS119
D006	8-719-911-19	DIODE 1SS119
D007	8-719-130-07	DIODE RD3.0E-B
D008	8-719-981-01	DIODE ERA81-004
D009	8-719-981-01	DIODE ERA81-004
D010	8-719-300-76	DIODE RH1A
D011	8-719-300-76	DIODE RH1A
D012	8-719-904-05	DIODE 1N4005
D013	8-719-300-76	DIODE RH1A
D014	8-719-904-05	DIODE 1N4005
D015	8-719-101-43	DIODE RD4.3E-L2
D016	8-719-101-43	DIODE RD4.3E-L2
D017	=>8-719-100-65	DIODE RD12E-B2

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark
D018	8-719-911-19	DIODE 1SS119	
D019	=>8-719-100-65	DIODE RD12E-B2	
D020	=>8-719-100-65	DIODE RD12E-B2	
D021	=>8-719-100-65	DIODE RD12E-B2	
D022	=>8-719-100-65	DIODE RD12E-B2	
D023	=>8-719-100-65	DIODE RD12E-B2	
D024	8-719-911-19	DIODE 1SS119	
D025	8-719-911-19	DIODE 1SS119	

FUSE

Ref.No.	Part No.	Description	Remark
F1	⚠ 1-532-259-00	FUSE, TIME-LAG 1.6A	

IC

Ref.No.	Part No.	Description	Remark
IC001	=>8-759-205-14	IC TA7504S-R	
IC002	8-759-132-40	IC UPC324C	
IC003	8-759-984-27	IC MB84027B	
IC004	8-743-690-00	IC BX-369	
IC005	8-743-690-00	IC BX-369	
IC006	8-759-832-10	IC LA3210ALC	
IC007	8-759-832-10	IC LA3210ALC	
IC008	8-759-907-79	IC CX-779	

COIL

Ref.No.	Part No.	Description	Remark
L001	1-421-421-00	COIL, CHOKE 100UH	
L002	1-407-492-00	MICRO INDUCTOR 1MMH	
L003	1-421-421-00	COIL, CHOKE 100UH	
L004	1-407-847-00	MICRO INDUCTOR 35UH	
L006	1-408-424-00	MICRO INDUCTOR 180UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q001	8-729-245-83	TRANSISTOR 2SC2458	
Q002	8-729-245-83	TRANSISTOR 2SC2458	
Q003	8-729-245-83	TRANSISTOR 2SC2458	
Q004	8-729-245-83	TRANSISTOR 2SC2458	
Q005	8-729-245-83	TRANSISTOR 2SC2458	
Q006	8-729-245-83	TRANSISTOR 2SC2458	
Q007	8-729-245-83	TRANSISTOR 2SC2458	
Q008	8-729-204-82	TRANSISTOR 2SA1048	
Q009	8-729-245-83	TRANSISTOR 2SC2458	
Q010	8-729-245-83	TRANSISTOR 2SC2458	
Q011	8-729-245-83	TRANSISTOR 2SC2458	
Q012	8-729-245-83	TRANSISTOR 2SC2458	
Q013	8-729-245-83	TRANSISTOR 2SC2458	
Q014	8-729-204-82	TRANSISTOR 2SA1048	
Q015	8-729-177-43	TRANSISTOR 2SD774	
Q016	8-729-204-82	TRANSISTOR 2SA1048	
Q017	8-729-204-82	TRANSISTOR 2SA1048	
Q018	8-729-245-83	TRANSISTOR 2SC2458	
Q019	8-729-204-82	TRANSISTOR 2SA1048	
Q020	8-765-620-00	TRANSISTOR 2SD1015	
Q021	8-729-204-82	TRANSISTOR 2SA1048	
Q022	8-729-204-82	TRANSISTOR 2SA1048	
Q023	8-729-204-82	TRANSISTOR 2SA1048	
Q024	8-729-245-83	TRANSISTOR 2SC2458	
Q025	8-729-245-83	TRANSISTOR 2SC2458	
Q026	8-729-177-32	TRANSISTOR 2SD773	

Ref.No.	Part No.	Description	Remark
Q027	8-729-113-32	TRANSISTOR 2SB733	
Q028	8-729-177-32	TRANSISTOR 2SD773	
Q029	8-729-113-32	TRANSISTOR 2SB733	
Q030	8-729-245-83	TRANSISTOR 2SC2458	
Q031	8-729-245-83	TRANSISTOR 2SC2458	
Q032	8-729-177-43	TRANSISTOR 2SD774	
Q033	8-729-204-82	TRANSISTOR 2SA1048	

RESISTOR

Ref.No.	Part No.	Description				Remark
R001	1-246-840-00	CARBON	510		1/8W	
R002	1-246-840-00	CARBON	510		1/8W	
R003	1-246-792-00	CARBON	5.6K		1/8W	
R004	1-246-792-00	CARBON	5.6K		1/8W	
R005	1-246-864-00	CARBON	51K		1/8W	
R006	1-246-864-00	CARBON	51K		1/8W	
R007	1-246-807-00	CARBON	100K		1/8W	
R008	1-247-055-00	CARBON	300K		1/8W	
R009	1-246-803-00	CARBON	47K		1/8W	
R010	1-246-801-00	CARBON	33K		1/8W	
R011	1-246-803-00	CARBON	47K		1/8W	
R012	1-246-801-00	CARBON	33K		1/8W	
R013	1-246-801-00	CARBON	33K		1/8W	
R014	1-246-803-00	CARBON	47K		1/8W	
R015	1-246-796-00	CARBON	12K		1/8W	
R016	1-246-801-00	CARBON	33K		1/8W	
R017	1-246-859-00	CARBON	20K		1/8W	
R018	1-246-786-00	CARBON	1.8K		1/8W	
R019	1-246-859-00	CARBON	20K		1/8W	
R020	1-246-852-00	CARBON	5.1K		1/8W	
R027	1-246-795-00	CARBON	10K		1/8W	
R028	1-246-795-00	CARBON	10K		1/8W	
R029	1-246-792-00	CARBON	5.6K		1/8W	
R030	1-246-789-00	CARBON	3.3K		1/8W	
R031	1-246-792-00	CARBON	5.6K		1/8W	
R032	1-246-861-00	CARBON	30K		1/8W	
R033	1-246-783-00	CARBON	1K		1/8W	
R034	1-214-787-00	METAL	270K	1%	1/4W	
R035	1-214-960-00	METAL	680K	1%	1/4W	
R036	1-246-847-00	CARBON	2K		1/8W	
R037	1-246-795-00	CARBON	10K		1/8W	
R038	1-246-811-00	CARBON	220K		1/8W	
R039	1-214-779-00	METAL	120K	1%	1/4W	
R040	1-214-964-00	METAL	1M	1%	1/4W	
R041	1-246-809-00	CARBON	150K		1/8W	
R042	1-246-801-00	CARBON	33K		1/8W	
R043	1-246-783-00	CARBON	1K		1/8W	
R044	1-247-053-00	CARBON	1M		1/8W	
R045	1-246-854-00	CARBON	7.5K		1/8W	
R046	1-246-859-00	CARBON	20K		1/8W	
R047	1-246-861-00	CARBON	30K		1/8W	
R048	1-246-853-00	CARBON	6.2K		1/8W	
R049	1-246-861-00	CARBON	30K		1/8W	
R050	1-246-861-00	CARBON	30K		1/8W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description				Remark
R051	1-246-783-00	CARBON	1K		1/8W	
R052	1-212-861-11	FUSIBLE	15	5%	1/4W	F
R053	1-246-783-00	CARBON	1K		1/8W	
R054	1-214-962-00	METAL	820K	1%	1/4W	
R055	1-246-797-00	CARBON	15K		1/8W	
R056	1-214-784-00	METAL	200K	1%	1/4W	
R057	1-246-797-00	CARBON	15K		1/8W	
R058	1-246-777-00	CARBON	330		1/8W	
R059	1-246-783-00	CARBON	1K		1/8W	
R060	1-246-851-00	CARBON	4.3K		1/8W	
R061	1-246-783-00	CARBON	1K		1/8W	
R062	1-246-783-00	CARBON	1K		1/8W	
R063	1-214-963-00	METAL	910K	1%	1/4W	
R064	1-214-777-00	METAL	100K	1%	1/4W	
R065	1-246-783-00	CARBON	1K		1/8W	
R066	1-246-783-00	CARBON	1K		1/8W	
R067	1-246-777-00	CARBON	330		1/8W	
R068	1-246-783-00	CARBON	1K		1/8W	
R069	1-246-851-00	CARBON	4.3K		1/8W	
R070	1-246-801-00	CARBON	33K		1/8W	
R071	1-246-787-00	CARBON	2.2K		1/8W	
R073	1-246-787-00	CARBON	2.2K		1/8W	
R074	1-246-799-00	CARBON	22K		1/8W	
R075	1-246-793-00	CARBON	6.8K		1/8W	
R076	1-246-783-00	CARBON	1K		1/8W	
R077	1-246-783-00	CARBON	1K		1/8W	
R078	1-246-795-00	CARBON	10K		1/8W	
R079	1-246-802-00	CARBON	39K		1/8W	
R080	1-246-771-00	CARBON	100		1/8W	
R081	1-246-783-00	CARBON	1K		1/8W	
R082	1-246-843-00	CARBON	910		1/8W	
R083	1-246-795-00	CARBON	10K		1/8W	
R084	1-246-795-00	CARBON	10K		1/8W	
R085	1-246-802-00	CARBON	39K		1/8W	
R086	1-246-795-00	CARBON	10K		1/8W	
R087	1-246-795-00	CARBON	10K		1/8W	
R088	1-246-795-00	CARBON	10K		1/8W	
R089	1-246-773-00	CARBON	150		1/8W	
R090	1-246-773-00	CARBON	150		1/8W	
R091	1-212-865-00	FUSIBLE	22	5%	1/4W	F
R092	1-246-449-00	CARBON	100	5%	1/4W	
R093	1-246-783-00	CARBON	1K		1/8W	
R094	1-246-779-00	CARBON	470		1/8W	
R096	1-246-799-00	CARBON	22K		1/8W	
R101	1-246-795-00	CARBON	10K		1/8W	
R102	1-246-803-00	CARBON	47K		1/8W	
R103	1-246-807-00	CARBON	100K		1/8W	
R104	1-214-143-00	METAL	3K	1%	1/4W	
R105	1-246-842-00	CARBON	750		1/8W	
R106	1-246-795-00	CARBON	10K		1/8W	
R107	1-246-861-00	CARBON	30K		1/8W	
R108	1-246-842-00	CARBON	750		1/8W	
R109	1-214-141-00	METAL	2.4K	1%	1/4W	

Ref.No.	Part No.	Description				Remark
R110	1-246-786-00	CARBON	1.8K		1/8W	
R111	1-246-793-00	CARBON	6.8K		1/8W	
R112	1-246-865-00	CARBON	62K		1/8W	
R113	1-214-158-00	METAL	12K	1%	1/4W	
R114	1-214-153-00	METAL	7.5K	1%	1/4W	
R115	1-246-807-00	CARBON	100K		1/8W	
R130	1-532-605-00	FUSE, ELECTRIC CURRENT				

VARIABLE RESISTOR

RV001	1-226-772-00	RES, ADJ, METAL GLAZE 4.7K
RV002	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K
RV003	1-226-715-00	RES, ADJ, SOLID 470K
RV004	1-226-714-00	RES, ADJ, SOLID 220K
RV005	1-226-704-00	RES, ADJ, METAL GLAZE 470K
RV006	1-226-703-00	RES, ADJ, METAL GLAZE 10K
RV007	1-226-704-00	RES, ADJ, METAL GLAZE 470K
RV008	1-226-704-00	RES, ADJ, METAL GLAZE 470K
RV009	1-226-703-00	RES, ADJ, METAL GLAZE 10K
RV010	1-226-704-00	RES, ADJ, METAL GLAZE 470K

TRANSFORMER

T001 ⚠	**1-447-071-00**	**TRANSFORMER, POWER**
T002	1-433-240-00	TRANSFORMER, FERRITE
T003	1-433-240-00	TRANSFORMER, FERRITE

THERMISTOR

TH001	1-800-947-00	THERMISTOR (DISK TYPE)

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♠:1-607-755-00 C-31 BOARD
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VARIABLE RESISTOR

RV030	1-228-347-00	RES, VAR, CARBON (WITH SW) 5K

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♠:A-7511-820-A C-28 BOARD, COMPLETE
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♠:3-662-040-00 CASE, SR COIL
♠:3-670-202-00 CASE (MAIN), SHIELD
♠:3-670-203-00 LID, BOTTOM, CASE, SHIELD
♠:3-670-208-00 SHEET, INSULATING, SHIELD, RG
♠:3-670-267-00 BUSHING, RG INSULATING

♠:3-674-524-01 LID, UPPER, SHIELD CASE

CAPACITOR

C001	1-123-321-00	ELECT	220MF	20%	16V
C002	1-102-117-00	CERAMIC	820PF	10%	50V
C003	1-123-306-00	ELECT	47MF	20%	10V
C004	1-123-308-00	ELECT	220MF	20%	10V
C005	1-123-308-00	ELECT	220MF	20%	10V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

C-28 SEESAW C-30

Ref.No.	Part No.	Description			Remark
C006	1-161-917-00	CERAMIC	1000P		
C007	1-161-917-00	CERAMIC	1000P		
C008	1-102-108-00	CERAMIC	150PF	10%	50V
C009	1-131-237-00	TANTALUM	1.5MF	20%	25V
C010	1-131-341-00	TANTALUM	0.1MF	20%	35V
C011	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C013	1-161-070-00	CERAMIC	0.01MF	20%	50V
C014	1-161-029-00	CERAMIC	0.0033MF	20%	25V
C015	1-131-201-00	TANTALUM	22MF	20%	10V
C016	1-102-505-00	CERAMIC	6PF	0.5PF	50V
C017	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C018	1-161-916-00	CERAMIC	47P		
C019	1-161-916-00	CERAMIC	47P		
C020	1-161-916-00	CERAMIC	47P		
C021	1-161-916-00	CERAMIC	47P		
C022	1-161-916-00	CERAMIC	47P		
C023	1-161-916-00	CERAMIC	47P		
C024	1-161-916-00	CERAMIC	47P		
C025	1-161-917-00	CERAMIC	1000P		

CONNECTOR

CN005	•:1-556-378-00	CONNECTOR ASSY (2.0MM) 6P
CN006	•:1-555-933-71	CONNECTOR ASSY (2.0MM) 2P
CN020	•:1-555-928-00	CONNECTOR ASSY (2.0MM) 3P
CN024	•:1-555-934-00	CONNECTOR ASSY (2.0MM) 2P

TRIMMER

CT001	1-141-227-00	TRIMMER, CERAMIC
CT002	1-141-232-00	CAP, TRIMMER 11PF

DIODE

D001	8-719-911-19	DIODE 1SS119
D002	8-719-911-19	DIODE 1SS119
D003	=>8-719-100-37	DIODE RD6.2E-B1
D004	8-719-982-04	DIODE ERB81-004
D005	=>8-712-500-00	DIODE 1T25

IC

IC001	8-759-930-00	IC CX-7930

COIL

L001	1-421-329-00	COIL, CHOKE 10UH
L002	1-421-381-00	COIL, FERRITE CHOKE 220UH
L003	1-421-329-00	COIL, CHOKE 10UH
L004	1-408-413-00	MICRO INDUCTOR 22UH
L005	1-408-424-00	MICRO INDUCTOR 180UH

TRANSISTOR

Q001	8-729-245-83	TRANSISTOR 2SC2458
Q002	8-729-245-83	TRANSISTOR 2SC2458
Q003	8-729-204-82	TRANSISTOR 2SA1048
Q004	⚠ 8-760-514-10	TRANSISTOR 2SA772-14
Q005	8-729-245-83	TRANSISTOR 2SC2458
Q006	8-729-245-83	TRANSISTOR 2SC2458

RESISTOR

Ref.No.	Part No.	Description			Remark
R001	1-246-777-00	CARBON	330		1/8W
R002	1-246-791-00	CARBON	4.7K		1/8W
R003	1-246-788-00	CARBON	2.7K		1/8W
R004	1-246-787-00	CARBON	2.2K		1/8W
R005	1-246-783-00	CARBON	1K		1/8W
R006	1-246-791-00	CARBON	4.7K		1/8W
R007	1-246-799-00	CARBON	22K		1/8W
R008	1-246-471-00	CARBON	820	5%	1/4W
R009	1-246-778-00	CARBON	390		1/8W
R010	1-246-841-00	CARBON	620		1/8W
R011	1-246-789-00	CARBON	3.3K		1/8W
R012	1-246-871-00	CARBON	200K		1/8W
R013	1-246-791-00	CARBON	4.7K		1/8W
R014	1-246-795-00	CARBON	10K		1/8W
R015	1-246-789-00	CARBON	3.3K		1/8W
R016	1-247-049-00	CARBON	470K		1/8W
R017	1-247-053-00	CARBON	1M		1/8W
R018	1-246-788-00	CARBON	2.7K		1/8W
R019	1-247-053-00	CARBON	1M		1/8W
R020	1-246-787-00	CARBON	2.2K		1/8W
R021	1-246-787-00	CARBON	2.2K		1/8W
R022	1-246-787-00	CARBON	2.2K		1/8W
R023	1-246-787-00	CARBON	2.2K		1/8W
R024	1-246-787-00	CARBON	2.2K		1/8W
R025	1-246-787-00	CARBON	2.2K		1/8W

VARIABLE RESISTOR

RV001	1-226-707-00	RES, ADJ, SOLID 1K
RV002	1-226-706-00	RES, ADJ, SOLID 470

CRYSTAL

X001	1-527-723-00	VIBRATOR, CRYSTAL
X002	1-527-724-21	VIBRATOR, CRYSTAL

****

A-7520-035-A SEESAW BOARD, COMPLETE
****

CONNECTOR

CN015	•:1-555-917-00	CONNECTOR ASSY (2.0MM) 5P

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•:1-607-754-00 C-30 BOARD
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•:3-670-233-00 RETAINER, SOCKET

CAPACITOR

C001	1-123-607-00	ELECT	0.1MF	20%	50V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description			Remark
C002	1-123-607-00	ELECT	0.1MF	20%	50V
C003	1-161-039-00	CERAMIC	0.001MF	10%	25V
C004	1-161-039-00	CERAMIC	0.001MF	10%	25V
C005	1-161-013-00	CERAMIC	0.01MF	10%	25V

CONNECTOR

CN023	●:1-560-460-00	PIN, CONNECTOR 4P			
CN024	●:1-560-455-00	PIN, CONNECTOR 2P			
CN025	●:1-560-459-00	PIN, CONNECTOR 3P			
CN026	●:1-560-459-00	PIN, CONNECTOR 3P			
CN029	1-561-454-00	SOCKET 8P			

DIODE

D001	=>8-719-100-65	DIODE RD12E-B2			
D002	=>8-719-100-65	DIODE RD12E-B2			

JACK

J001	1-507-755-00	JACK (SMALL TYPE)			
J002	1-507-755-00	JACK (SMALL TYPE)			

COIL

L001	1-421-421-00	COIL, CHOKE 100UH			

RESISTOR

R001	1-246-786-00	CARBON	1.8K		1/8W
R002	1-246-771-00	CARBON	100		1/8W

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●:1-607-756-00 C-33 BOARD

RESISTOR

R001	1-246-795-00	CARBON	10K		1/8W
R002	1-246-792-00	CARBON	5.6K		1/8W
R003	1-246-861-00	CARBON	30K		1/8W

SWITCH

S001	1-552-409-00	SWITCH, SLIDE			

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●:1-607-753-00 C-29 BOARD

CAPACITOR

C001	1-123-617-00	ELECT	10MF	20%	16V
C002	1-161-013-00	CERAMIC	0.01MF	10%	25V
C003	1-161-007-00	CERAMIC	0.0033MF	10%	25V
C004	1-123-661-00	ELECT	100MF	20%	6.3V
C005	1-123-645-00	ELECT	33MF	20%	10V
C006	1-123-617-00	ELECT	10MF	20%	16V
C007	1-123-645-00	ELECT	33MF	20%	10V

CONNECTOR

Ref.No.	Part No.	Description			Remark
CN002	●:1-555-926-21	CONNECTOR ASSY (2.0MM) 3P			
CN013	●:1-555-933-81	CONNECTOR ASSY (2.0MM) 2P			
CN016	●:1-555-919-00	CONNECTOR ASSY (2.0MM) 4P			
CN022	●:1-560-461-00	PIN, CONNECTOR 5P			

DIODE

D001	8-719-812-42	DIODE TLY124			

IC

IC001	8-759-745-56	IC NJM4556D			

JACK

J001	1-507-756-00	JACK (SMALL TYPE)			

RESISTOR

R001	1-246-803-00	CARBON	47K		1/8W
R002	1-246-803-00	CARBON	47K		1/8W
R003	1-246-455-00	CARBON	180	5%	1/4W
R004	1-246-855-00	CARBON	9.1K		1/8W
R005	1-246-859-00	CARBON	20K		1/8W
R006	1-246-835-00	CARBON	200		1/8W
R007	1-246-859-00	CARBON	20K		1/8W
R008	1-246-795-00	CARBON	10K		1/8W
R009	1-246-795-00	CARBON	10K		1/8W
R010	1-246-795-00	CARBON	10K		1/8W
R011	1-246-795-00	CARBON	10K		1/8W
R012	1-246-758-00	CARBON	8.2		1/8W
R013	1-246-779-00	CARBON	470		1/8W
R014	1-246-801-00	CARBON	33K		1/8W
R016	1-246-787-00	CARBON	2.2K		1/8W

SWITCH

S001	1-513-254-00	SLIDE SWITCH			
S002	1-553-119-00	SWITCH, SLIDE			

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●:1-607-626-00 C-55 BOARD

CONNECTOR

CN021	●:1-560-459-00	PIN, CONNECTOR 3P			

SWITCH

S001	1-553-813-00	SWITCH, PUSH			

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●:1-607-627-00 C-56 BOARD

	1-535-248-00	TERMINAL			

SWITCH

S002	1-554-194-00	SWITCH, PUSH (RUBBER CONTACT)			

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark

MISCELLANEOUS

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Ref.No.	Part No.	Description	Remark
	1-547-076-00	LENS, ZOOM (VCL-1106YD)	
	1-555-826-00	CABLE, CONNECTION	
	♠:1-555-908-00	CONNECTOR ASSY (2.0MM) 10P	
	♠:1-555-933-61	CONNECTOR ASSY (2.0MM) 2P	
	8-701-021-33	CT-2133/2123	
Q1	=>8-729-283-42	TRANSISTOR 2SB834	
S1	1-553-805-00	SWITCH, ROTARY (WITH CAM)	

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ACCESSORIES AND PACKING MATERIALS

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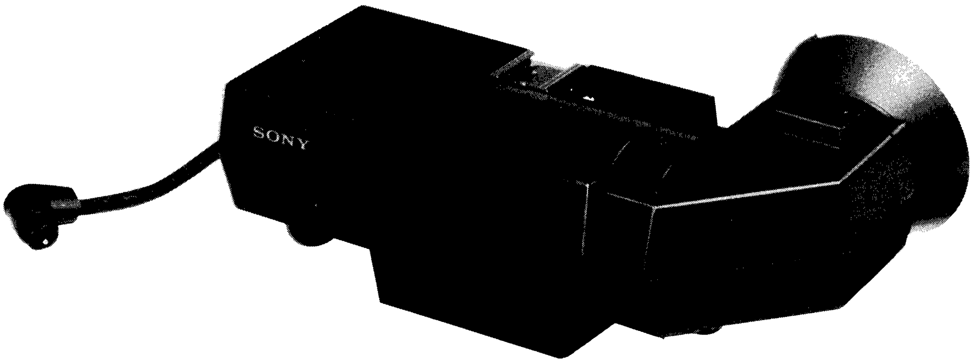
Part No.	Description	Remark
X-2270-901-0	CASE ASSY, CARRYING	
1-504-059-11	MAGNETIC EARPHONE(ME-20H)	
3-674-515-00	SHEET, PROTECTION	
3-674-516-00	CUSHION (LOWER)	
3-674-517-00	CUSHION (UPPER)	
3-674-518-00	CUSHION, FIXED, EVF	
3-674-523-00	INDIVIDUAL CARTON	
3-701-627-00	BAG, POLYETHYLENE	
3-773-021-11	MANUAL, INSTRUCTION (AEP ONLY)	
3-773-021-41	MANUAL, INSTRUCTION (AEP ONLY)	
3-773-021-51	MANUAL, INSTRUCTION (UK ONLY)	
3-848-514-01	BAG, PROTECTION	

When indicating parts by reference number, please include the board name.

HVF-2000PA

SERVICE MANUAL

AEP Model
UK Model



May, 1982

SPECIFICATION

Viewfinder	1½ inch monochrome
	Dimensions approx. 190 × 76 × 105 mm (w/h/d) (7½ × 3 × 4¼ inches)
	Weight approx. 0.5 kg (1 lb 2 oz)
Supplied accessories	Viewfinder HVF-2000PA (1)
	Earpiece ME-20H (1)
	Carrying case LC-20HVC (1)

ELECTRONIC VIEWFINDER

SONY®

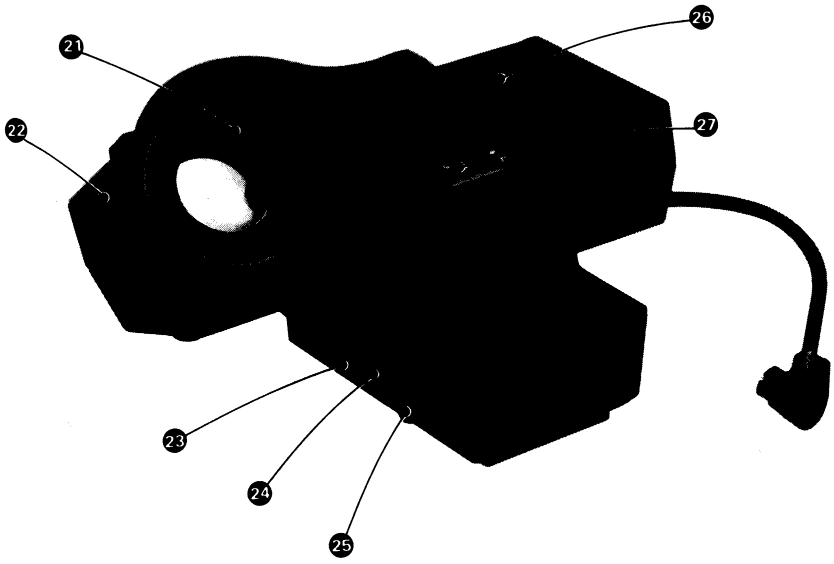
MICROFILM

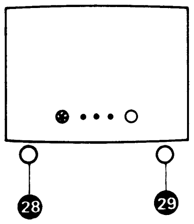
ACC

SAFETY-RELATED COMPONENT WARNING ‼

COMPONENTS IDENTIFIED BY SHADING AND ⚠ MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

1. LOCATION AND FUNCTION OF CONTROLS





㉑ Eyecup
The viewfinder screen can be viewed by raising the eyecup.

㉒This can be angled 90 degrees up through 10 degrees down. Adjust the position for easy viewing.

㉓ INDICATOR selector
Selects the indication on the viewfinder.

㉔ PEAKING switch
Set ON to sharpen the picture contour or for monitoring on the viewfinder regardless of the fader effect.
Normally, set OFF.

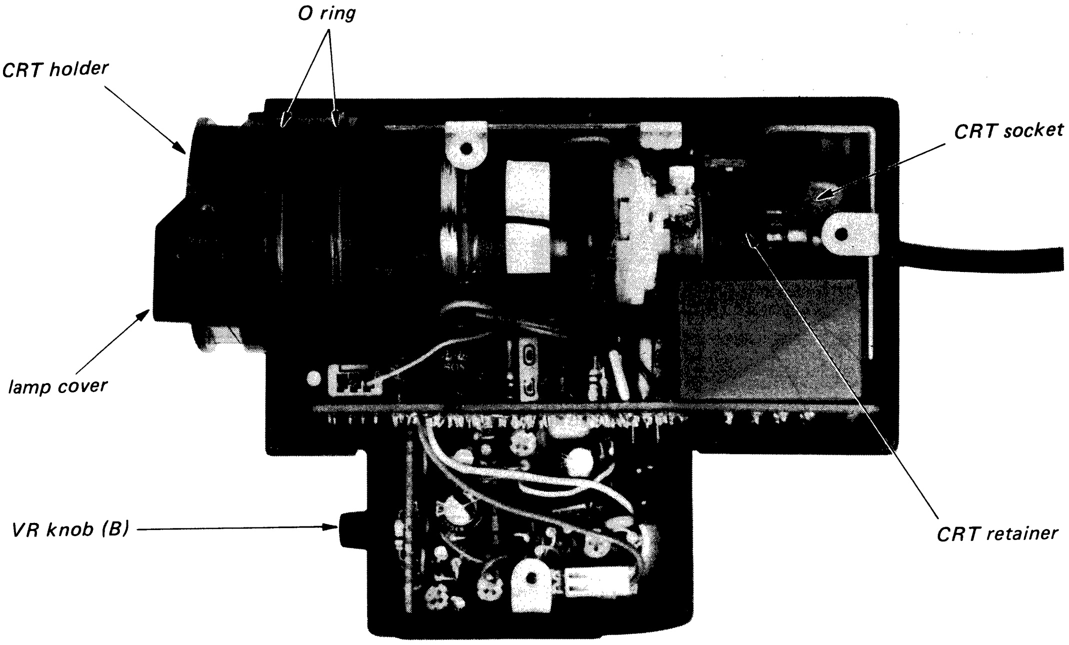
㉕ BRT control
Adjusts the brightness of the picture on the viewfinder.

㉖ Tape run lamp (front, red)
The lamp goes on and off at the same time as the red lamp in the viewfinder.

㉗ Accessory shoe
External microphones or video lights may be attached here.

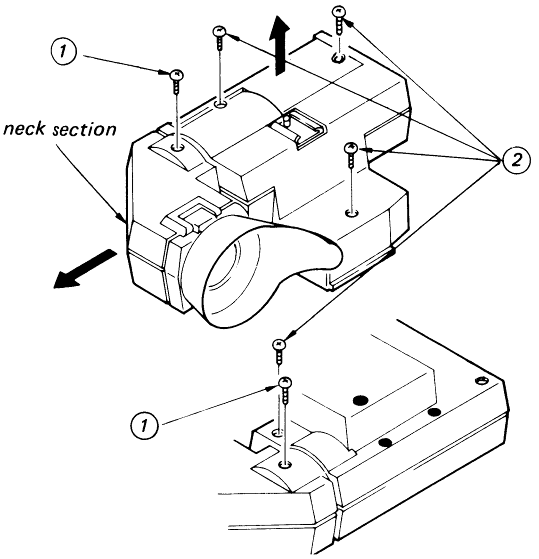
In the viewfinder
㉘ Yellow lamp
Lights up when the subject is too dark.

㉙ Red lamp
Lights up while the tape is running. The lamp flickers when the battery pack becomes discharged when the recorder operates on battery.


O ring
CRT holder
CRT socket
lamp cover
VR knob (B)
CRT retainer

2. REPLACEMENT OF ELECTRONIC VIEWFINDER CRT

❶ Removal of Outer Cabinet

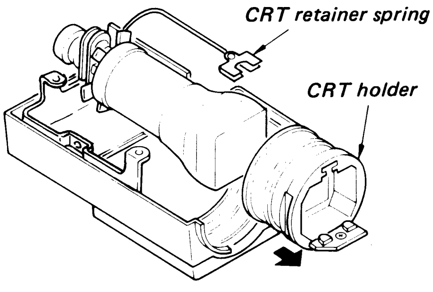


①
neck section
②
①

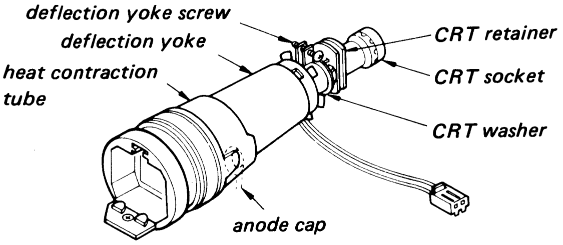
① *Remove the two screws ① and remove the neck section in the direction of the arrow.*

② *Remove the four screws ② and remove the upper case in the direction of the arrow.*

❷ Removal of CRT



CRT retainer spring
CRT holder



deflection yoke screw
deflection yoke
heat contraction tube
CRT retainer
CRT socket
CRT washer
anode cap

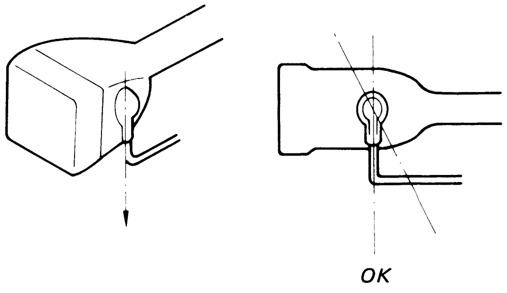
① *Remove the CRT holder in the direction of the arrow.*
(The CRT retainer spring can be removed also.)

② *Pull the heat contraction tube off of the CRT neck section so that the anode cap can be removed.*

③ *Remove the CRT socket, retainer and washer.*

④ *Loosen the deflection yoke screw and pull the CRT off of the deflection yoke.*

❸ Mounting of CRT (1)

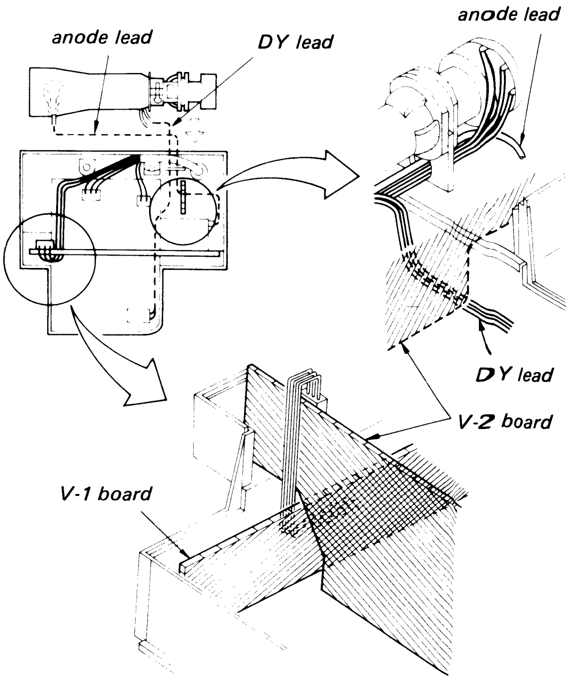


① *Wrap mending tape around the DY tightening section of the CRT.*

② *After attaching the anode cap to the CRT, wind tape around both of them. Or, cover them with the heat contraction tube and contract using a hair dryer.*

Note: The anode lead should be as shown below.

❹ Mounting of CRT (2)

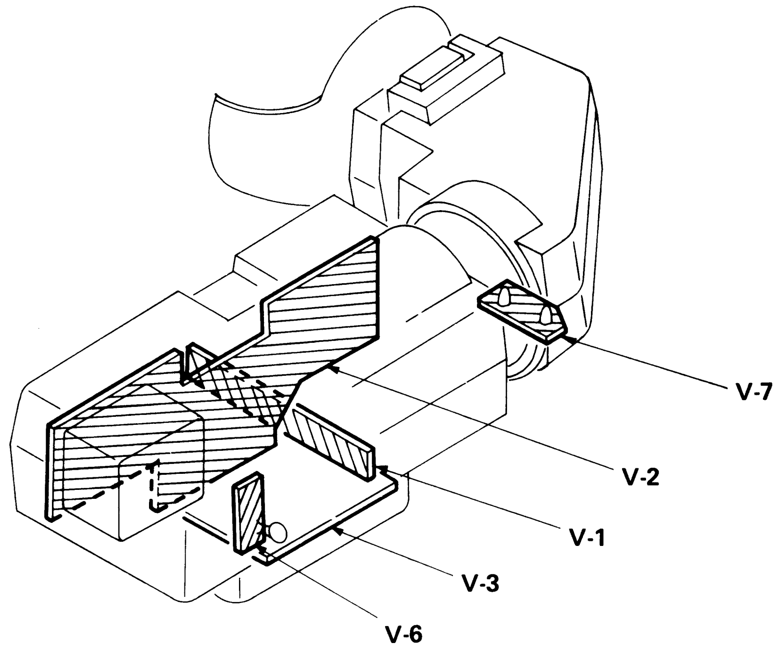


anode lead
DY lead
anode lead
DY lead
V-2 board
V-1 board

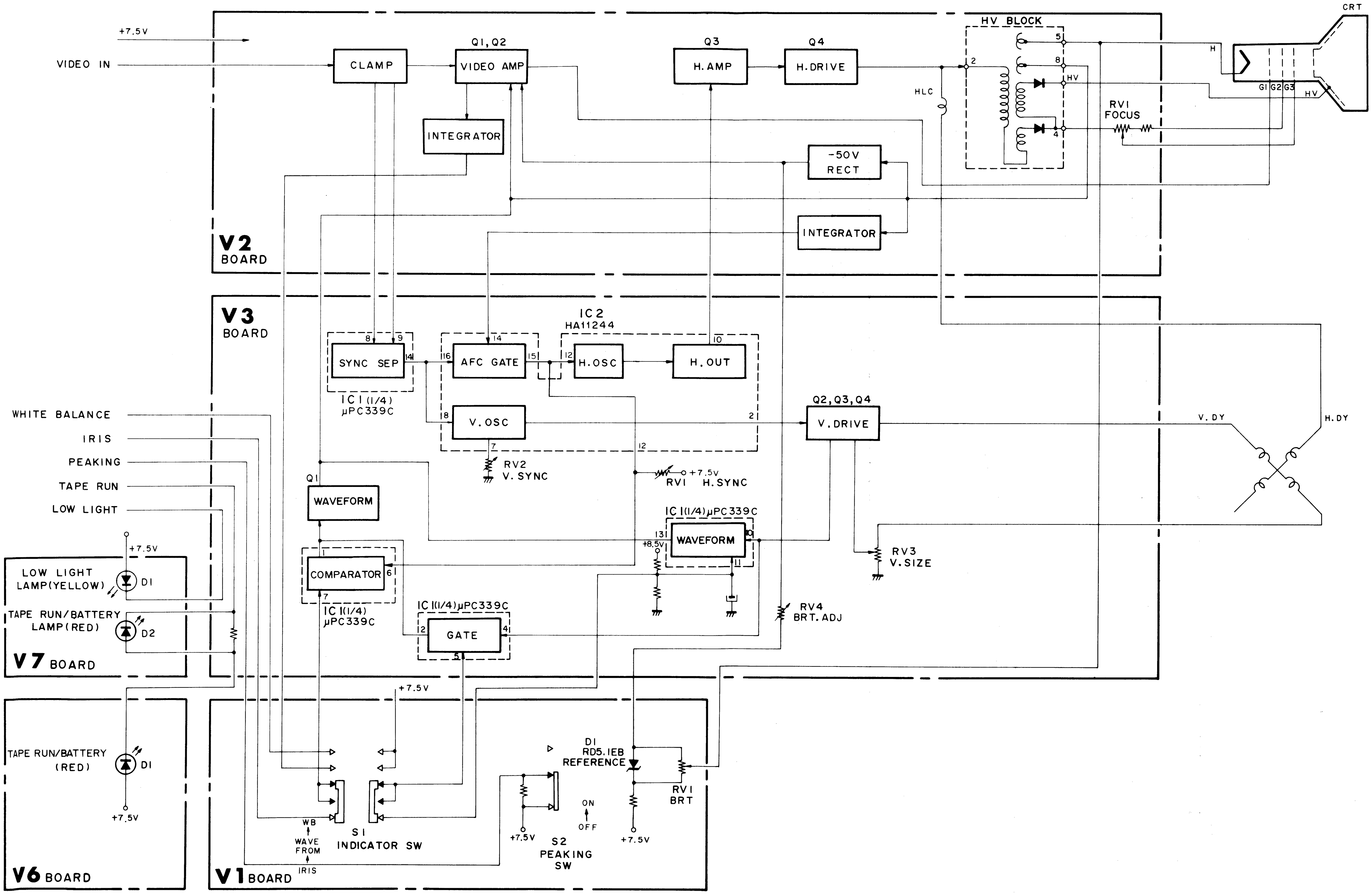
Be especially careful of the CRT wiring. The DY lead, anode lead and connector to V-2 board must be as shown in the figure.

➡ **DISASSEMBLY** ⇨ **INSTALLATION**

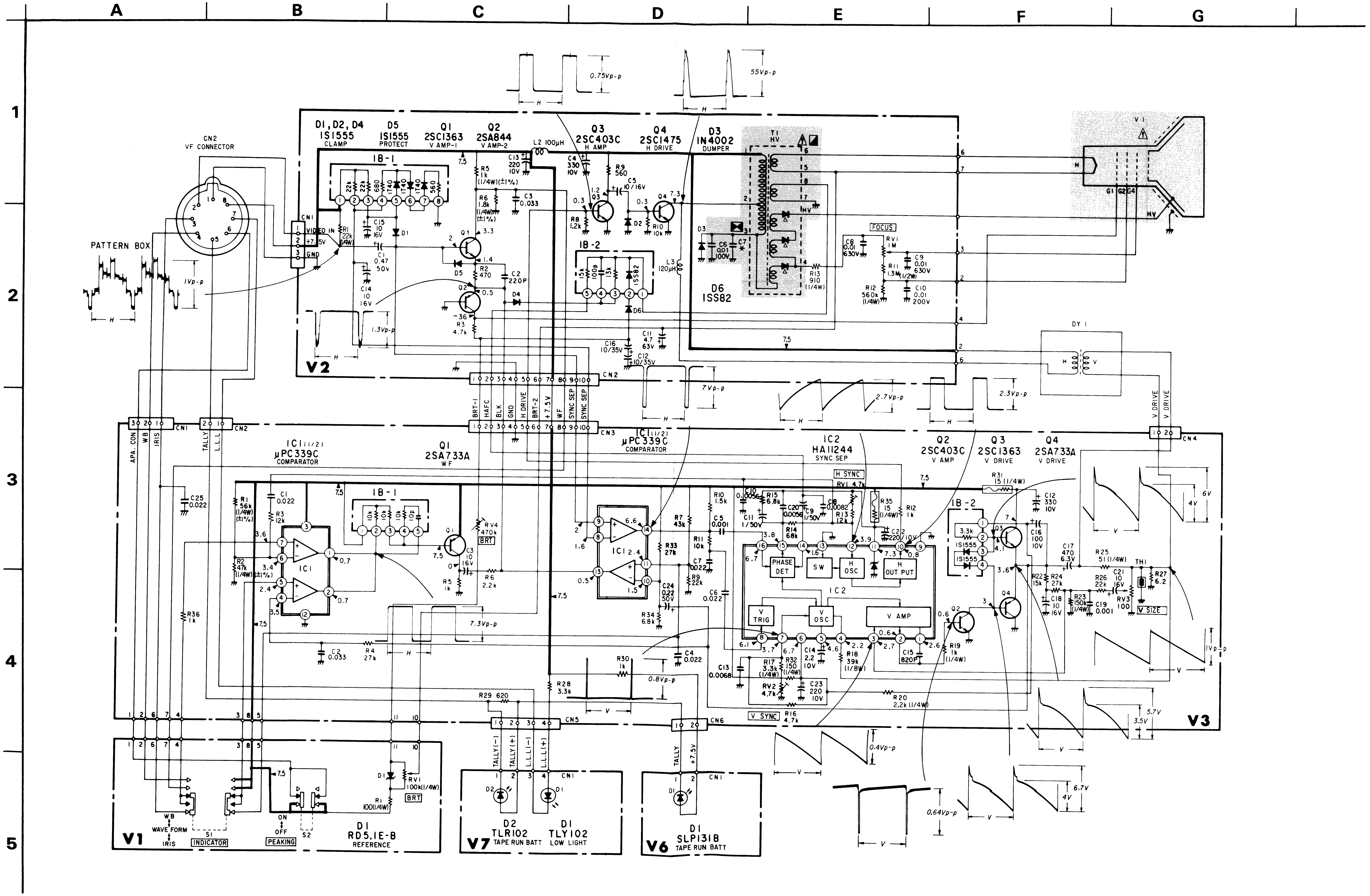
3. CIRCUIT BOARDS LOCATION


V-7
V-2
V-1
V-3
V-6

4. BLOCK DIAGRAM


+7.5V
VIDEO IN
CLAMP
Q1, Q2
VIDEO AMP
INTEGRATOR
Q3
H. AMP
Q4
H. DRIVE
HV BLOCK
5
8
2
HV
4
HLC
RV1
FOCUS
CRT
H
G1
G2
G3
HV
-50V
RECT
INTEGRATOR
V2
BOARD
V3
BOARD
IC2
HA11244
8
9
SYNC SEP
14
16
AFC GATE
14
15
12
H. OSC
H. OUT
10
IC1 (1/4)
μPC339C
18
V. OSC
2
7
RV2
V. SYNC
12
+7.5V
RV1 H. SYNC
Q2, Q3, Q4
V. DRIVE
V. DY
H. DY
WHITE BALANCE
IRIS
PEAKING
TAPE RUN
LOW LIGHT
Q1
WAVEFORM
IC1 (1/4) μPC339C
13
+8.5V
WAVEFORM
10
11
COMPARATOR
6
7
IC1 (1/4)
μPC339C
RV3
V. SIZE
IC1 (1/4) μPC339C
2
GATE
4
5
RV4
BRT. ADJ
+7.5V
LOW LIGHT
LAMP (YELLOW)
D1
TAPE RUN/BATTERY
LAMP (RED)
D2
V7 BOARD
+7.5V
TAPE RUN/BATTERY
(RED)
D1
+7.5V
V6 BOARD
D1
RD5.1EB
REFERENCE
RV1
BRT
WB
WAVE
FROM
IRIS
S1
INDICATOR SW
ON
OFF
+7.5V
S2
PEAKING
SW
+7.5V
V1 BOARD

5. SCHEMATIC DIAGRAM *– Ref. No. V-1 BOARD: 5000 series, V-2 BOARD: 5200 series, V-3 BOARD: 5400 series, V-6 BOARD: 6000 series, V-7 BOARD: 6200 series –*



A
B
C
D
E
F
G
1
2
3
4
5
CN2
VF CONNECTOR
PATTERN BOX
1Vp-p
H
D1, D2, D4
1S1555
CLAMP
D5
1S1555
PROTECT
Q1
2SC1363
V AMP-1
Q2
2SA844
V AMP-2
L2 100μH
Q3
2SC403C
H AMP
Q4
2SC1475
H DRIVE
D3
1N4002
DUMPER
T1
HV
0.75Vp-p
55Vp-p
IB-1
IB-2
D6
1SS82
FOCUS
RV1 1M
V1
G1
G2
G4
HV
DY1
1.3Vp-p
7Vp-p
2.7Vp-p
2.3Vp-p
V2
CN1
CN2
VIDEO IN
+7.5V
GND
BRT-1
HAFC
BLK
GND
H DRIVE
BRT-2
+7.5V
WF
SYNC SEP
SYNC SEP
V DRIVE
V DRIVE
APA. CON
W.B
IRIS
TALLY
L.L.L
CN3
CN4
IC1(1/2)
μPC339C
COMPARATOR
Q1
2SA733A
WF
IC1(1/2)
μPC339C
COMPARATOR
IC2
HA11244
SYNC SEP
Q2
2SC403C
V AMP
Q3
2SC1363
V DRIVE
Q4
2SA733A
V DRIVE
H SYNC
RV1 4.7k
PHASE DET
SW
H OSC
H OUT PUT
V TRIG
V OSC
V AMP
IC2
RV4 470k
BRT
RV2 4.7k
RV3 100
V SIZE
V SYNC
TH1
7.3Vp-p
0.8Vp-p
6V
4V
1Vp-p
5.7V
3.5V
0.4Vp-p
0.64Vp-p
6.7V
4V
V3
CN5
CN6
TALLY(−)
TALLY(+)
L.L.L(−)
L.L.L(+)
TALLY
+7.5V
V1
WB
WAVE FORM
IRIS
S1
INDICATOR
ON
OFF
PEAKING
S2
D1
RD5.1E-B
REFERENCE
RV1 100k(1/4W)
BRT
R1 100(1/4W)
V7
D2
TLR102
TAPE RUN BATT
D1
TLY102
LOW LIGHT
V6
D1
SLP131B
TAPE RUN BATT

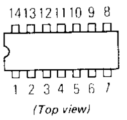
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

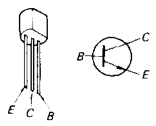
- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/8W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000kΩ
- The components marked by (⁘) are the adjusting elements.
- The value of the component marked by ☒ is confirmed for every set when it is manufactured and determined for satisfying the specification of the X-ray requlation. Whenever the component is replaced, replace it only with the same component as the one used in the machine. The specified adjustment and confirmation are necessary when the component marked by ◪ on the schematic diagram is replaced. If the result of the confirmation does not satisfy the instructed value, replace the component marked by ◪ and perform the adjustment until the value is satisfied. (The adjustment procedure of C7 is described in the [FB Pulse Width Adjustment], separate adjustment manual.
- △ : internal component.
- ☐: panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a Readings are taken with a 10 MΩ digital multimeter.
- Voltage variations may be noted due to normal production tolerances.
- ☐: adjustment for repair.

6. SEMICONDUCTORS

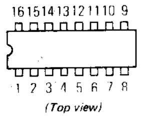
µPC339C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

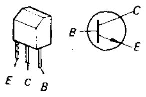
2SC1363
2SC1475



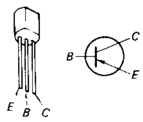
HA11244


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

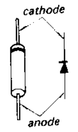
2SD774



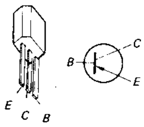
2SA733A



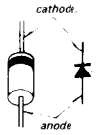
10E-2
1S1555
1N4002
RD5.1E-B


cathode
anode

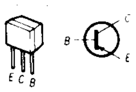
2SA844



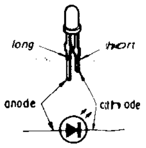
1SS82
1SS83


cathode
anode

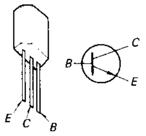
2SA1175



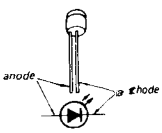
SLP131B


long
short
anode
cathode

2SC403C
2SC634SP



TLR102
TLY102


anode
cathode

7. PRINTED WIRING BOARDS V-1 V-2

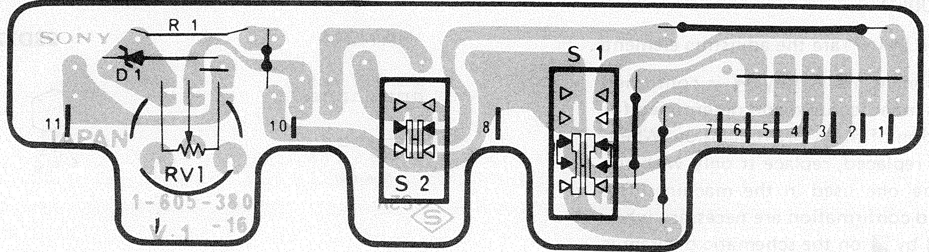
— Conductor Side —

— Ref. No. V-1 BOARD: 5000 series, V-2 BOARD: 5200 series —

A B C D

1

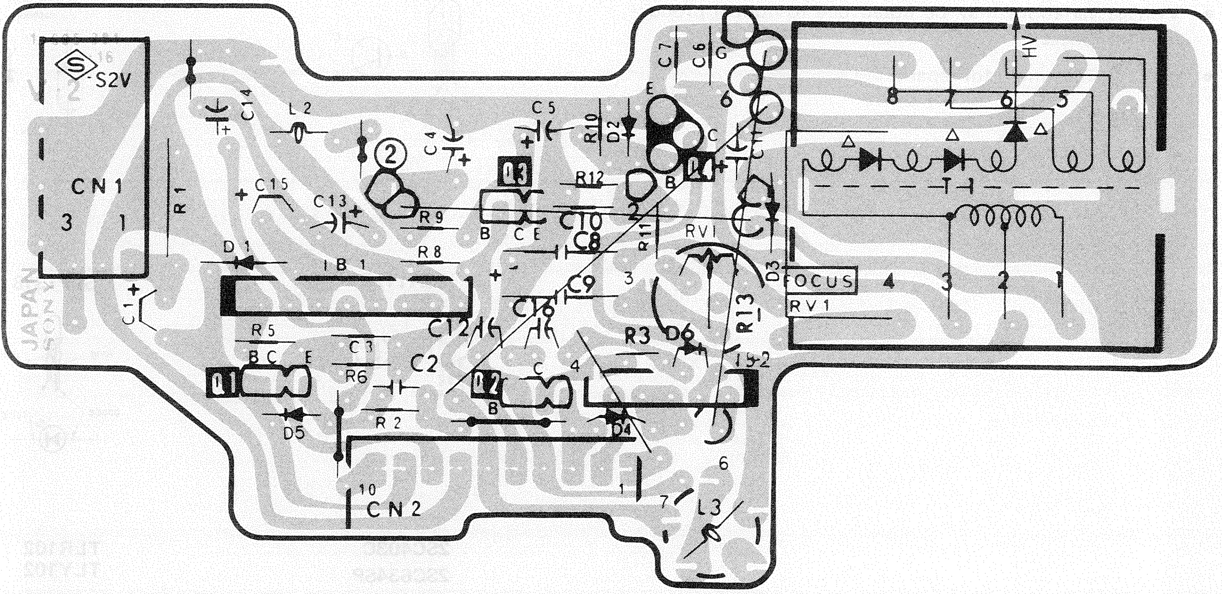
V-1 BOARD


SONY
R 1
D 1
11
JAPAN
RV1
1-605-380
V-1 -16
10
S 2
8
S 1
7
6
5
4
3
2
1

2

3

V-2 BOARD


S2V
CN1
3
1
R 1
C14
L 2
C 5
R10
D2
C 4
②
C15
C13
Q3
R12
R 9
B
C E
C10
C8
R11
RV1
D3
FOCUS
RV 1
C7
C6
G
E
C
B
Q4
C11
HV
8
7
6
5
4
3
2
1
D 1
IB 1
R 8
C 9
C16
C12
C 1
JAPAN
SONY
R 5
B C
E
Q1
C 3
R6
C2
Q2
R 2
D5
D4
R3
D6
R13
IS 2
CN 2
10
1
L3
6
7

4

5

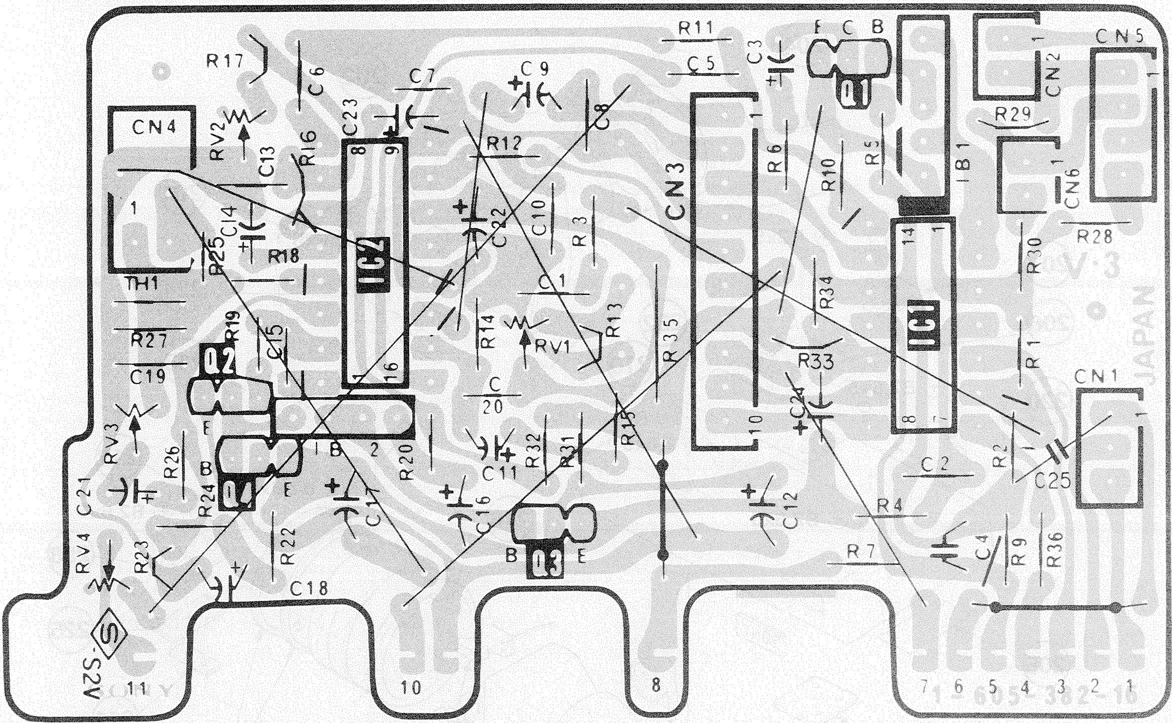
V-3 **V-6** **V-7**

– Ref. No. V-3 BOARD: 5400 series, V-6 BOARD: 6000 series, V-7 BOARD: 6200 series –

A B C D

1

V-3 BOARD



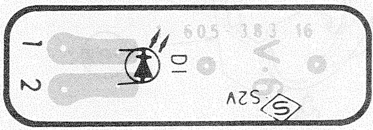
R11
C5
C3
E C B
CN5
CN2
R17
C6
C7
C9
C8
CN4
RV2
C13
R16
C23
IC2
R12
C10
R3
CN3
R6
R10
R5
IB1
R29
CN6
C14
R25
R18
C22
C1
R34
IC1
R30
R28
TH1
R27
R19
C15
Q2
R14
RV1
R13
R35
R33
R1
CN1
C19
C20
C24
RV3
R26
Q4
R20
C11
R32
R31
R15
C2
R2
C25
RV4
C21
R24
R23
R22
C17
C16
C12
R4
C4
R9
R36
R7
C18
Q3
B E
S2V
11
10
8
7 6 5 4 3 2 1
1-605-382-16
V-3
JAPAN

2

3

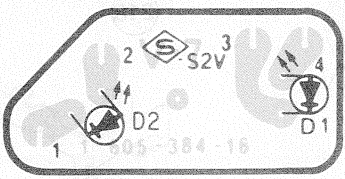
4

V-6 BOARD



1
2
D1
605-383-16
S2V

V-7 BOARD



2
S2V
3
4
D2
D1
1
1-605-384-16

5

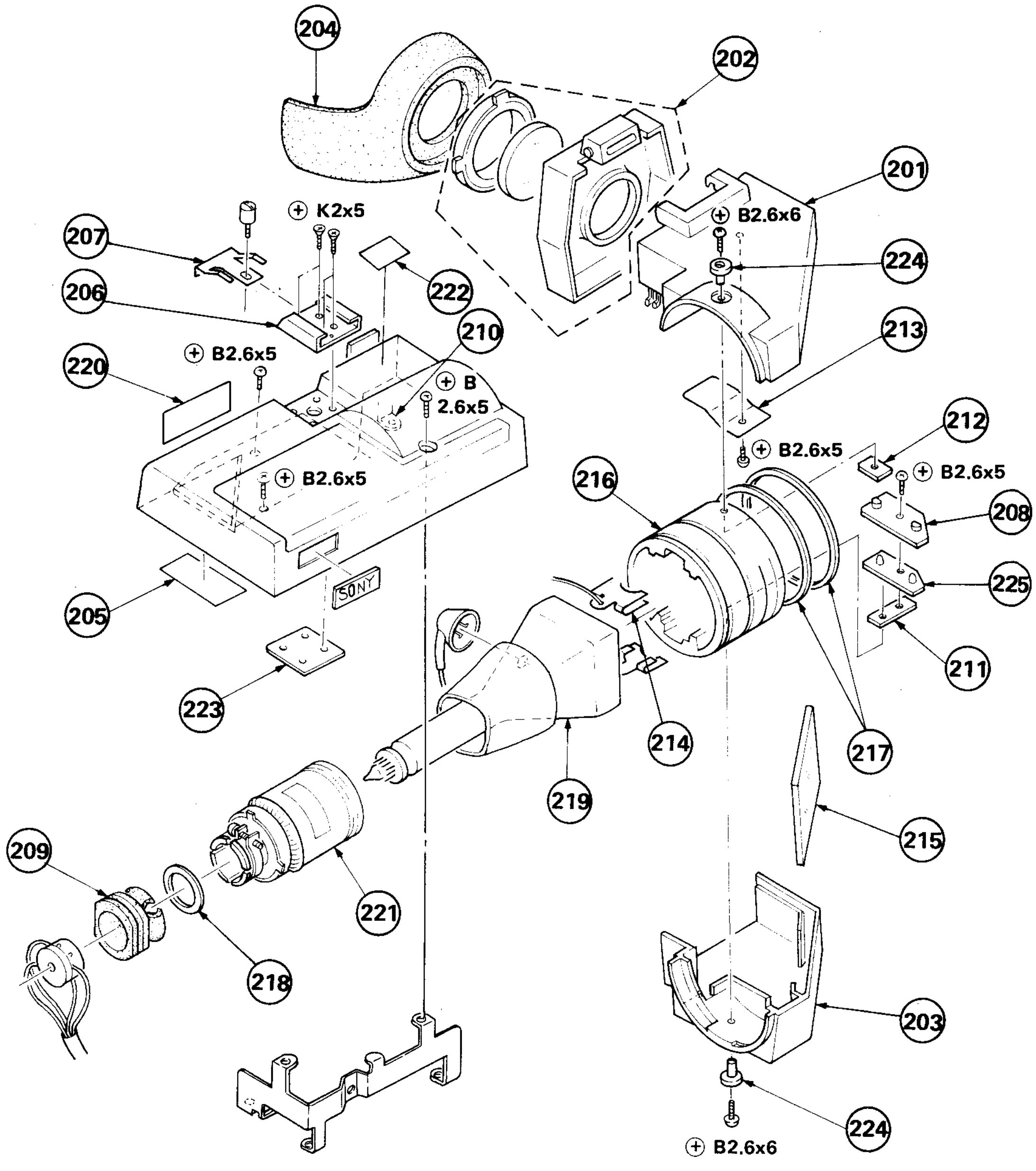
8. EXPLODED VIEWS

VIEW FINDER (1)

NOTE:

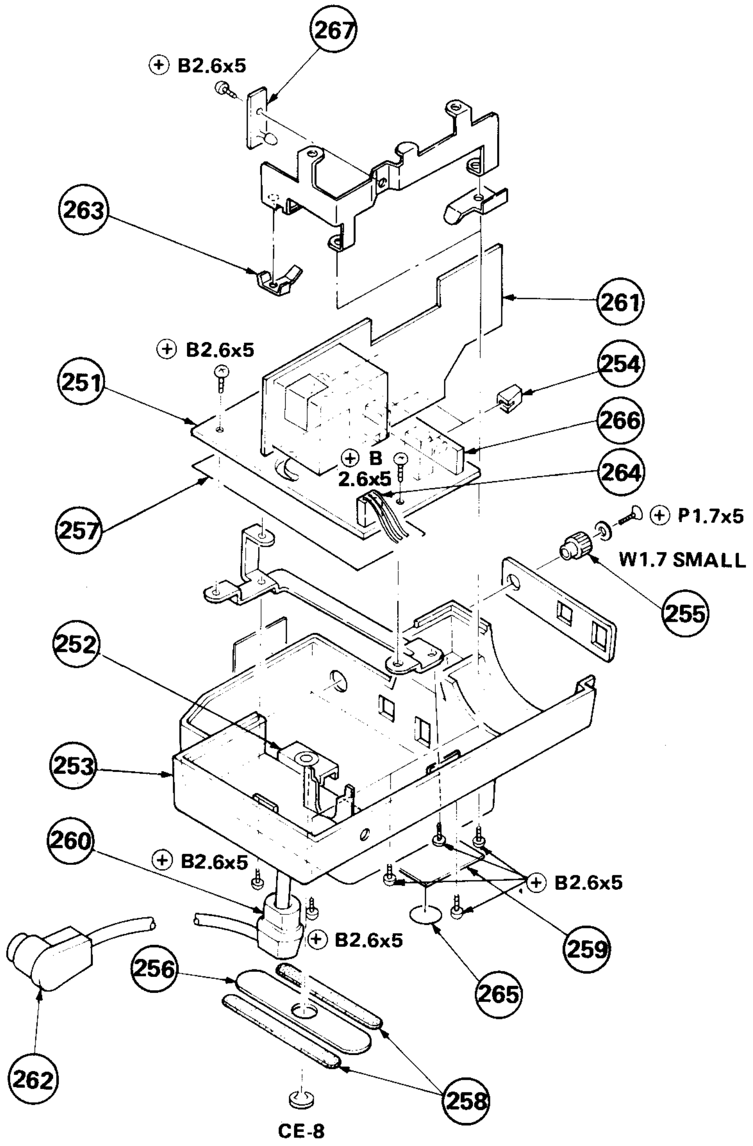
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.


204
202
201
⊕ K2x5
207
⊕ B2.6x6
224
206
222
210
213
⊕ B2.6x5
220
⊕ B 2.6x5
⊕ B2.6x5
212
⊕ B2.6x5
⊕ B2.6x5
216
208
SONY
225
205
211
223
214
217
219
215
209
221
218
203
224
⊕ B2.6x6

No.	Part No.	Description	Remark
201	X-3661-928-0	CASE (A) ASSY, MIRROR	
202	X-3670-235-0	TABLE ASSY, LENS	
203	X-3663-809-0	CASE (B) ASSY, MIRROR	
204	2-235-902-00	CUP, EYE	
205	♠:3-646-675-00	LABEL, PICTURE TUBE	
206	3-657-420-02	SHOE	
207	3-657-421-00	SPRING, LEAF	
208	3-661-928-00	COVER, LAMP	
209	3-661-931-00	RETAINER, CRT	
210	3-661-933-00	PLATE, FASTENING (A)	
211	3-661-937-00	NUT (A), PLATE	
212	3-661-938-00	NUT (B), PLATE	
213	3-661-939-00	SPRING, LEAF	
214	♠:3-661-940-00	SPRING	
215	3-661-947-00	MIRROR	
216	3-661-957-00	HOLDER, CRT	
217	3-670-229-00	RING, O	
218	3-662-034-00	WASHER, CRT	
219	⚠A-7609-011-A	PICTURE TUBE ASSY	
220	3-703-043-00	LABEL, CAUTION, MAIN	
221	1-451-205-00	DEFLECTION YOKE (B/W)	
222	3-663-807-00	LABEL, CAUTION, EVF	
223	3-661-946-00	BRACKET, SHOE	
224	♠:3-674-508-00	SLEEVE	
225	♠:1-605-384-16	V7 BOARD	

VIEW FINDER (2)



267
⊕ B2.6x5
263
261
⊕ B2.6x5
251
254
266
⊕ B 2.6x5
264
⊕ P1.7x5
257
W1.7 SMALL
255
252
253
260
⊕ B2.6x5
⊕ B2.6x5
⊕ B2.6x5
259
256
265
262
258
CE-8

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	♠:A-7511-830-A	V-3 BOARD, COMPLETE		260	3-703-001-00	BUSHING, CORD	
252	X-3661-926-0	PLATE ASSY, BOTTOM		261	♠:A-7511-829-A	V-2 BOARD, COMPLETE	
253	X-3663-808-0	CASE ASSY, VF LOWER	263	262	1-555-075-00	CONNECTOR, VF	
254	3-661-929-00	KNOB, SWITCH		263	♠:3-670-277-00	PLATE, GROUND	
255	3-661-930-00	KNOB (B), CONTROL		264	♠:1-555-040-00	CONNECTOR (4P)	
256	♠:3-661-941-00	PLATE, COVER		265	3-701-940-01	LABEL, BEAB (UK ONLY)	
257	♠:3-670-276-00	SHEET (A), INSULATING, VF		266	♠:1-605-380-16	V1 BOARD	
258	3-662-036-00	CUSHION, VF		267	♠:1-605-383-16	V6 BOARD	
259	♠:3-674-202-00	LABEL, MODEL NUMBER					

9. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : µF, PF : µµF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : µH

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description				Remark
	♦1-605-384-16	V7 BOARD				
		DIODE				
D001	8-719-810-20	DIODE TLY102				
D002	8-719-801-02	DIODE TLR102				

* * *

	♦:A-7511-829-A	V-2 BOARD, COMPLETE				
	1-526-540-00	SOCKET, PICTURE TUBE				
		CAPACITOR				
C001	1-123-610-00	ELECT	0.47MF	20%	50V	
C002	1-102-110-00	CERAMIC	220PF	10%	50V	
C003	1-161-019-00	CERAMIC	0.033MF	10%	25V	
C004	1-123-309-00	ELECT	330MF	20%	10V	
C005	1-123-617-00	ELECT	10MF	20%	16V	
C006 ⚠	1-108-377-00	MYLAR	0.01MF	10%	100V	
☒ C007 ⚠		MYLAR		10%	100V	
C008	1-130-579-00	MYLAR	0.01MF	10%	630V	
C009	1-130-579-00	MYLAR	0.01MF	10%	630V	
C010	1-108-421-00	MYLAR	0.01MF	10%	200V	
C011	1-123-369-00	ELECT	4.7MF	20%	63V	
C012	1-123-620-00	ELECT	10MF	20%	35V	
C013	1-123-308-00	ELECT	220MF	20%	10V	
C014	1-123-617-00	ELECT	10MF	20%	16V	
C015	1-123-617-00	ELECT	10MF	20%	16V	
C016	1-123-620-00	ELECT	10MF	20%	35V	
		CONNECTOR				
CN001	♦:1-560-090-00	PIN, CONNECTOR (3P)				
CN002	1-561-104-00	SOCKET, CONNECTOR				
		DIODE				
D001	8-719-815-55	DIODE 1S1555				
D002	8-719-815-55	DIODE 1S1555				
D003	=>8-719-200-02	DIODE 10E-2				
D004	8-719-815-55	DIODE 1S1555				
D005	8-719-815-55	DIODE 1S1555				
D006	=>8-719-901-83	DIODE 1SS83				
		COIL				
L002	1-421-421-00	COIL, CHOKE 100UH				
L003	1-459-356-21	COIL, FERRITE (HLC) 120UH				
		TRANSISTOR				
Q001	=>8-729-600-27	TRANSISTOR 2SC634SP				
Q002	8-729-384-48	TRANSISTOR 2SA844				
Q003	8-724-375-01	TRANSISTOR 2SC403C				
Q004	=>8-729-177-43	TRANSISTOR 2SD774				

Ref.No.	Part No.	Description				Remark
		RESISTOR				
R001	1-246-505-00	CARBON	22K	5%	1/4W	
R002	1-246-779-00	CARBON	470		1/8W	
R003	1-246-791-00	CARBON	4.7K		1/8W	
R005	1-214-132-00	METAL	1K	1%	1/4W	
R006	1-214-138-00	METAL	1.8K	1%	1/4W	
R008	1-246-784-00	CARBON	1.2K		1/8W	
R009	1-246-780-00	CARBON	560		1/8W	
R010	1-246-795-00	CARBON	10K		1/8W	
R011	1-202-648-00	COMPOSITION	1.3M	5%	1/2W	
R012	1-246-539-00	CARBON	560K	5%	1/4W	
R013	1-246-472-00	CARBON	910	5%	1/4W	
		VARIABLE RESISTOR				
RV001	1-222-846-00	RES, ADJ, SOLID 1M				
		TRANSFORMER				
T001 ⚠	1-453-090-00	DC BLOCK, HIGH-VOLTAGE				

* * *

	♦:1-605-380-16	V1 BOARD				
		DIODE				
D001	8-719-151-07	DIODE RD5.1E-B				
		RESISTOR				
R001	1-246-521-00	CARBON	100K	5%	1/4W	
		VARIABLE RESISTOR				
RV001	1-226-724-00	RES, VAR, CARBON 100K				
		SWITCH				
S001	1-552-409-00	SWITCH, SLIDE				
S002	1-553-121-00	SWITCH, SLIDE				

* * *

	♦:A-7511-830-A	V-3 BOARD, COMPLETE				
	1-535-079-00	TERMINAL (7P)				
	1-535-248-00	TERMINAL				
		CAPACITOR				
C001	1-161-017-00	CERAMIC	0.022MF	10%	25V	
C002	1-161-019-00	CERAMIC	0.033MF	10%	25V	
C003	1-123-617-00	ELECT	10MF	20%	16V	
C004	1-161-017-00	CERAMIC	0.022MF	10%	25V	
C005	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C006	1-108-242-00	MYLAR	0.022MF	10%	50V	

V-3 V-6

Ref.No.	Part No.	Description			Remark
C007	1-161-017-00	CERAMIC	0.022MF	10%	25V
C008	1-161-012-00	CERAMIC	0.0082MF	10%	25V
C009	1-123-611-00	ELECT	1MF	20%	50V
C010	1-130-027-00	FILM	0.0056MF	5%	50V
C011	1-123-611-00	ELECT	1MF	20%	50V
C012	1-123-309-00	ELECT	330MF	20%	10V
C013	1-161-011-00	CERAMIC	0.0068MF	10%	25V
C014	1-131-419-00	TANTALUM	2.2MF	20%	10V
C015	1-102-117-00	CERAMIC	820PF	10%	50V
C016	1-123-307-00	ELECT	100MF	20%	10V
C017	1-123-298-00	ELECT	470MF	20%	6.3V
C018	1-123-617-00	ELECT	10MF	20%	16V
C019	1-102-074-00	CERAMIC	0.001MF	10%	50V
C020	1-161-010-00	CERAMIC	0.0056MF	10%	25V
C021	1-123-617-00	ELECT	10MF	20%	16V
C022	1-123-308-00	ELECT	220MF	20%	10V
C023	1-123-308-00	ELECT	220MF	20%	10V
C024	1-123-608-00	ELECT	0.22MF	20%	50V
C025	1-161-017-00	CERAMIC	0.022MF	10%	25V

CONNECTOR

CN001♦:	1-560-123-00	PLUG, CONNECTOR (2.5MM PITCH)
CN002♦:	1-560-290-00	PLUG,.CONNECTOR (2.5MM PITCH)
CN003	1-508-974-00	PIN, CONNECTOR
CN004♦:	1-508-916-00	CONNECTOR PIN 2P
CN005♦:	1-508-797-00	PIN, CONNECTOR 4P
CN006♦:	1-508-796-00	PIN, CONNECTOR 2P

IC

IC001	8-759-133-90	IC UPC339C
IC002	8-759-312-44	IC HA11244

TRANSISTOR

Q001	=>8-729-117-54	TRANSISTOR 2SA1175
Q002	8-724-375-01	TRANSISTOR 2SC403C
Q003	=>8-729-600-27	TRANSISTOR 2SC634SP
Q004	=>8-729-117-54	TRANSISTOR 2SA1175

RESISTOR

Ref.No.	Part No.	Description				Remark
R001	1-214-174-00	METAL	56K	1%	1/4W	
R002	1-214-172-00	METAL	47K	1%	1/4W	
R003	1-246-796-00	CARBON	12K		1/8W	
R004	1-246-803-00	CARBON	47K		1/8W	
R005	1-246-783-00	CARBON	1K		1/8W	
R006	1-246-787-00	CARBON	2.2K		1/8W	
R007	1-246-863-00	CARBON	43K		1/8W	
R009	1-246-799-00	CARBON	22K		1/8W	
R010	1-246-785-00	CARBON	1.5K		1/8W	
R011	1-246-795-00	CARBON	10K		1/8W	
R012	1-246-783-00	CARBON	1K		1/8W	
R013	1-246-796-00	CARBON	12K		1/8W	
R014	1-246-805-00	CARBON	68K		1/8W	
R015	1-246-793-00	CARBON	6.8K		1/8W	
R016	1-246-791-00	CARBON	4.7K		1/8W	
R017	1-246-485-00	CARBON	3.3K	5%	1/4W	
R018	1-246-802-00	CARBON	39K		1/8W	
R019	1-246-473-00	CARBON	1K	5%	1/4W	
R020	1-246-481-00	CARBON	2.2K	5%	1/4W	
R022	1-246-797-00	CARBON	15K		1/8W	
R023	1-246-525-00	CARBON	150K	5%	1/4W	
R024	1-246-800-00	CARBON	27K		1/8W	
R025	1-246-442-00	CARBON	51	5%	1/4W	
R026	1-246-799-00	CARBON	22K		1/8W	
R027	1-246-817-00	CARBON	6.2		1/8W	
R028	1-246-789-00	CARBON	3.3K		1/8W	
R029	1-246-841-00	CARBON	620		1/8W	
R030	1-246-783-00	CARBON	1K		1/8W	
R031	1-212-861-11	FUSIBLE	15	5%	1/4W	F
R032	1-246-453-00	CARBON	150	5%	1/4W	
R033	1-246-800-00	CARBON	27K		1/8W	
R034	1-246-793-00	CARBON	6.8K		1/8W	
R035	1-212-861-11	FUSIBLE	15	5%	1/4W	F
R036	1-246-783-00	CARBON	1K		1/8W	

VARIABLE RESISTOR

RV001	1-226-709-00	RES, ADJ, SOLID 4.7K
RV002	1-226-709-00	RES, ADJ, SOLID 4.7K
RV003	1-226-705-00	RES, ADJ, SOLID 100
RV004	1-226-715-00	RES, ADJ, SOLID 470K

THERMISTOR

TH001	1-806-213-00	THERMISTOR

****

♦1-605-383-16 V6 BOARD
****

	3-440-113-00	WASHER, HANDLE

CONNECTOR

CN001♦:	1-551-808-00	CONNECTOR 2P

DIODE

D001	8-719-901-31	DIODE SLP131B

****

MISCELLANEOUS
****

	1-451-205-00	DEFLECTION YOKE (B/W)
	♦:1-555-040-00	CONNECTOR (4P)
CN2	1-555-075-00	CONNECTOR, VF
V1	⚠.A-7609-011-A	PICTURE TUBE ASSY

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
3-701-627-00	BAG, POLYETHYLENE	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Sony Corporation
TV & Camera Group

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82E0995-1
Printed in Japan

HVC-4000P

ADJUSTMENT MANUAL

D03

October, 1982

MF TRINICON
COLOUR VIDEO CAMERA

SONY®

MICROFILM

Consumer
VIDEO

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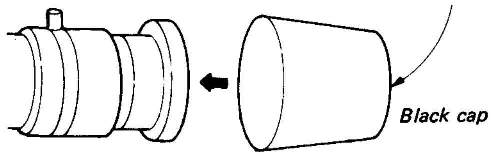
SECTION 1
PREPARATION FOR ALIGNMENT

1-1. EQUIPMENT REQUIRED

- AC adaptor
- Colour monitor
- Oscilloscope
- Vectorscope
- Volt-ohm meter or Digital voltmeter
- Frequency counter
- Black cap

Black cap



Prepare a black caps (free of light leakage) as shown in the figure

1-2. PREPARATION

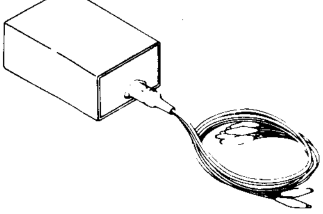
Set knobs and switches of the camera as follows.

1. SENSITIVITY SELECTOR . . . . [AUTO green ■]
2. IRIS control . . . . [AUTO]
3. WHITE BALANCE control . . . . [1 💡]
4. WHITE BALANCE FINE control . . . . [green ■]
5. FADER switch . . . . [OFF green ■]
6. SHARPNESS switch . . . . [green ■]
7. EARPHONE sound selector . . . . [VTR]
8. TAPE RUN/STOP button . . . . [RELEASE (right)]
9. LOCK switch . . . . [RELEASE]
10. VIDEO selector . . . . [NORMAL]
11. INDICATOR selector (EVF) . . . . [green ■ (IRIS)]
12. PEAKING switch (EVF) . . . . [green ■ (off)]

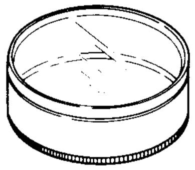
1-3. JIG AND TOOLS FOR MAINTENANCE

Ref. No.	**Name**	**Part cord**		**Use**
		Adjustment using pattern box and vector scope	**Adjustment using colour chart and oscilloscope**	
J-1	4.5MHz oscillator jig	J-6020-180-A		H. SIZE adjustment
J-2	ND filter	J-6080-069-A		LLA adjustment
	Red filter	J-6080-059-A		VH phase and Focus adjustment
J-3	Eccentricity screwdriver	J-6080-051-A		Flange back adjustment
J-4	Reflection type resolution chart		J-6080-061-A	Trinicon tube horizontalness, Flange back, V size and V centering adjustment
J-5	Transparent resolution chart	J-6021-870-A		
J-6	Reflection type colour chart & B/W chart		J-6080-056-A	
J-7	Transparent colour pattern	J-6020-250-A		
J-8	Pattern box PTB-100 (W/J-7 transparent colour pattern)	J-6020-490-A		
J-9	Vectorscope (SONY/TEKTRONIX TYPE 1420)			
J-10	Allen wrench (d = 1.5 mm)	7-700-736-05		Flange back adjustment

J-1



J-2



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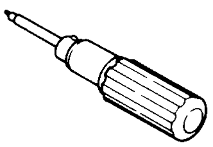

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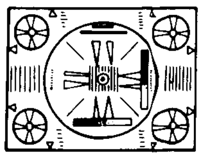

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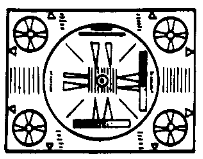

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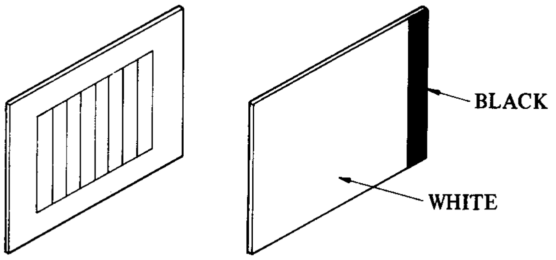
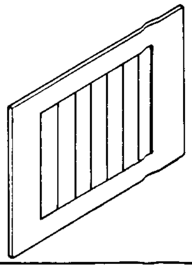


J-7



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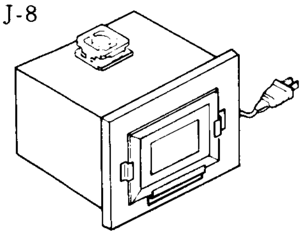

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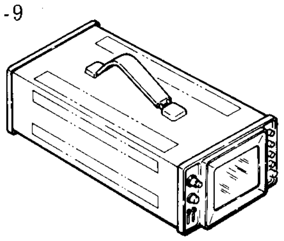
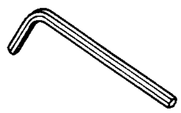


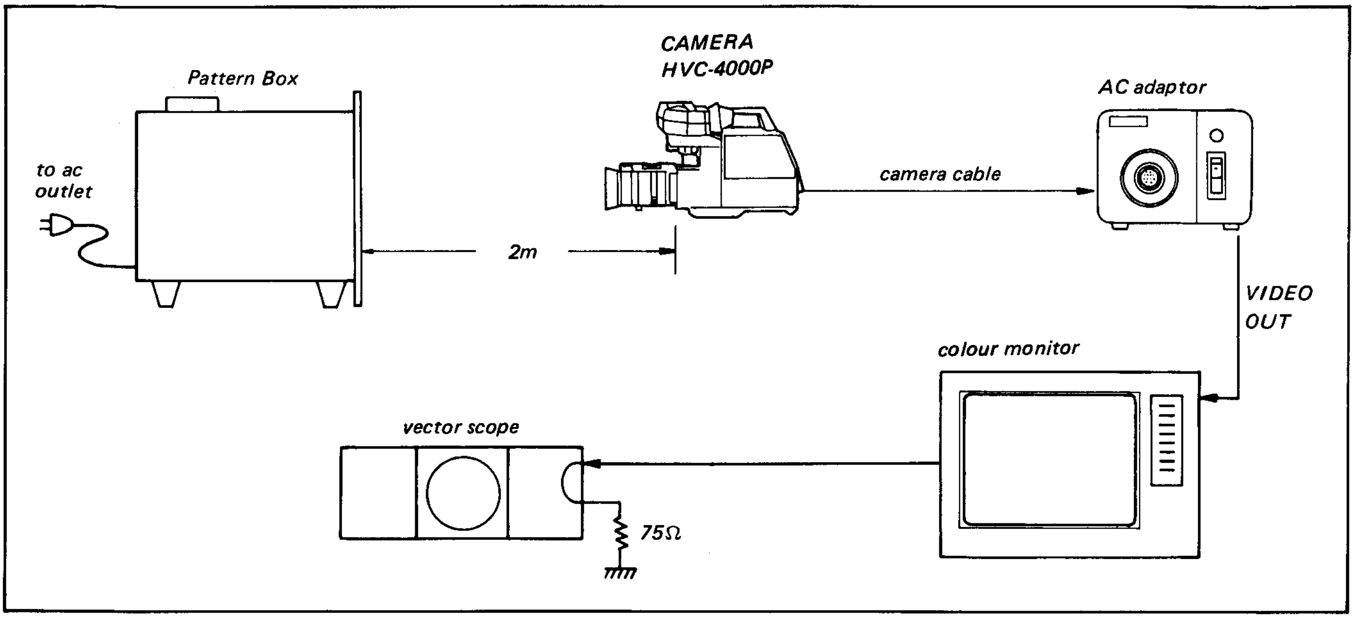
J-10



Note:

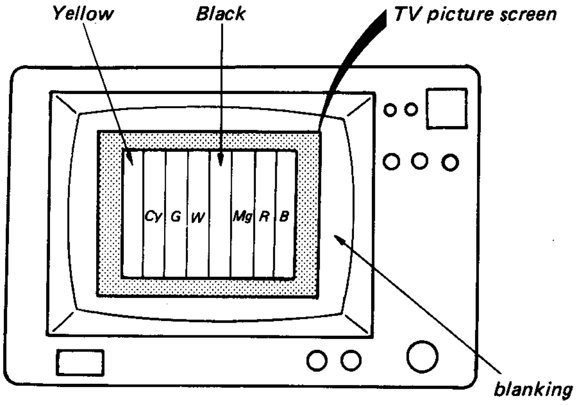
J-2 filter is not screw-in type, but is capping-over-lens type, therefore, this filter can be used for all models.

1-4. CONNECTION

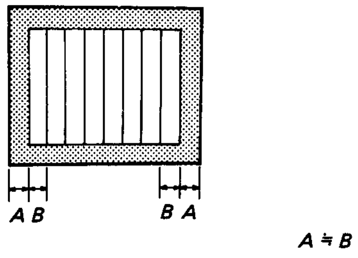

CAMERA
HVC-4000P
Pattern Box
AC adaptor
to ac outlet
camera cable
2m
VIDEO OUT
colour monitor
vector scope
75Ω

1-5. PICTURE FRAME ADJUSTMENT

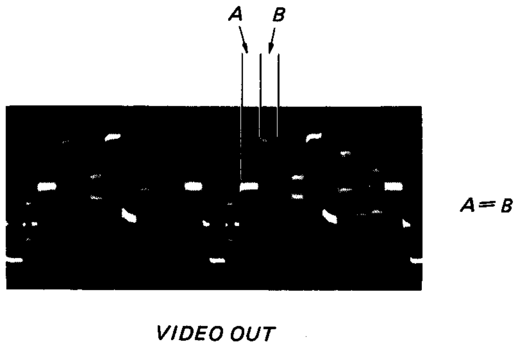
1. For adjusting the subject to the picture from shown below, use an underscan monitor.


Yellow
Black
TV picture screen
Cy
G
W
Mg
R
B
blanking

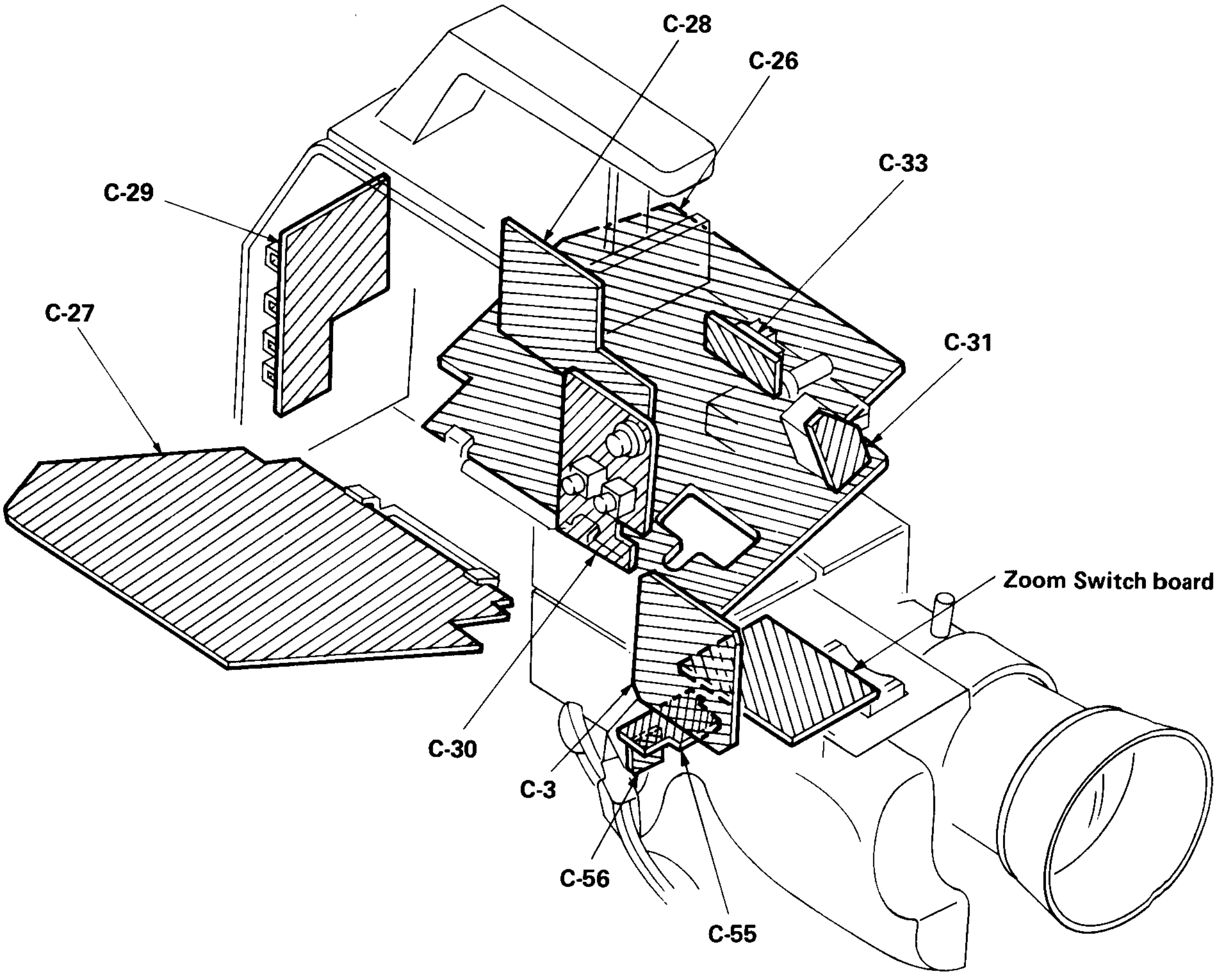
The raster becomes underscan, comparing with the one on the ordinary monitor TV.

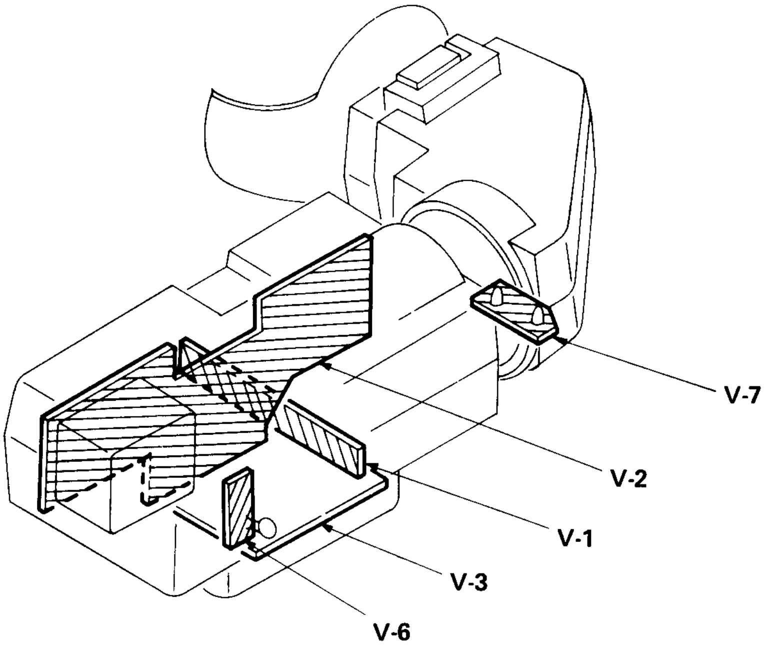


2. If the underscan monitor is not available, follow the procedures below for the picture from adjustment.
   ① Connect the probe of the oscilloscope to camera out TP8/ C-26 board.
   ② Set the zoom lens to the telephoto side and adjust the focus.
   ③ Move the zoom ring so that A and B the figure become almost equal.


A
B
A = B
VIDEO OUT

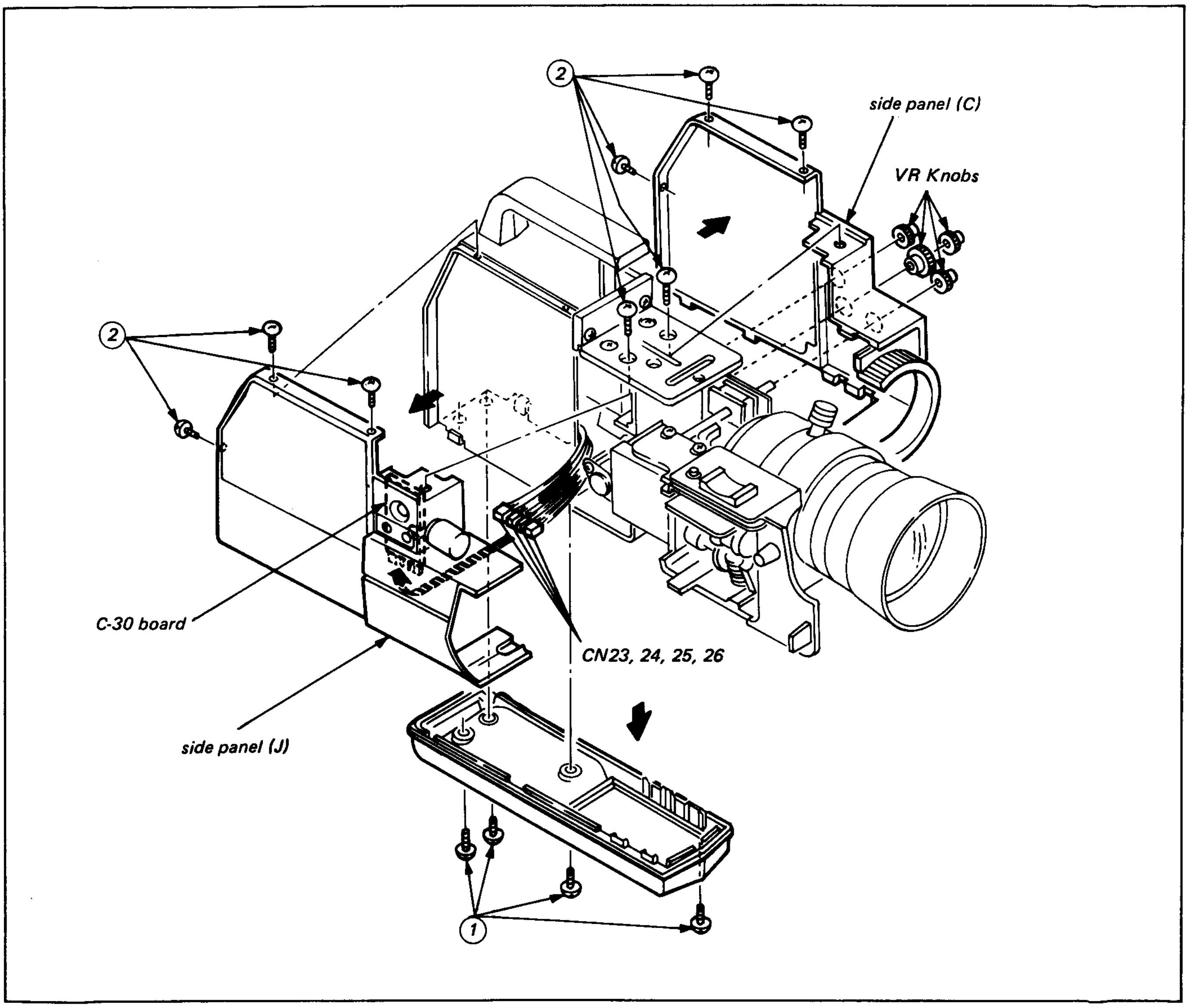
1-6. CIRCUIT BOARDS LOCATION


C-28
C-26
C-33
C-29
C-27
C-31
Zoom Switch board
C-30
C-3
C-56
C-55


V-7
V-2
V-1
V-3
V-6

1-7. DISASSEMBLY

1-7-1. Side Panels, Shoulder Pad

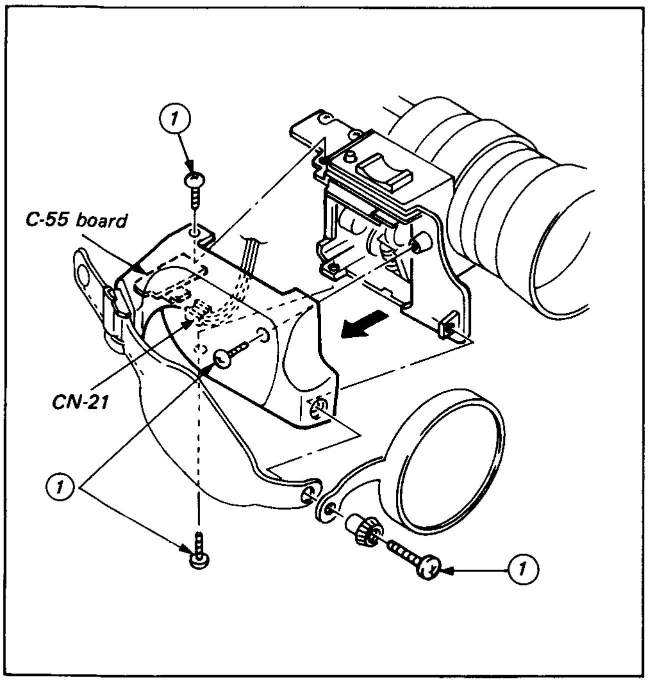

②
side panel (C)
VR Knobs
②
C-30 board
CN23, 24, 25, 26
side panel (J)
①

1 Remove the four screws ① and remove the shoulder pad.

2 Remove the eight screws ② and the side panels.

Note: The CN23–26 connectors on the C-30 board on side panel (J) and the four VR knobs on side panel (C) must be removed. (Pull hard to remove.) Also, when removing the side panels, be sure to turn off the power supply.

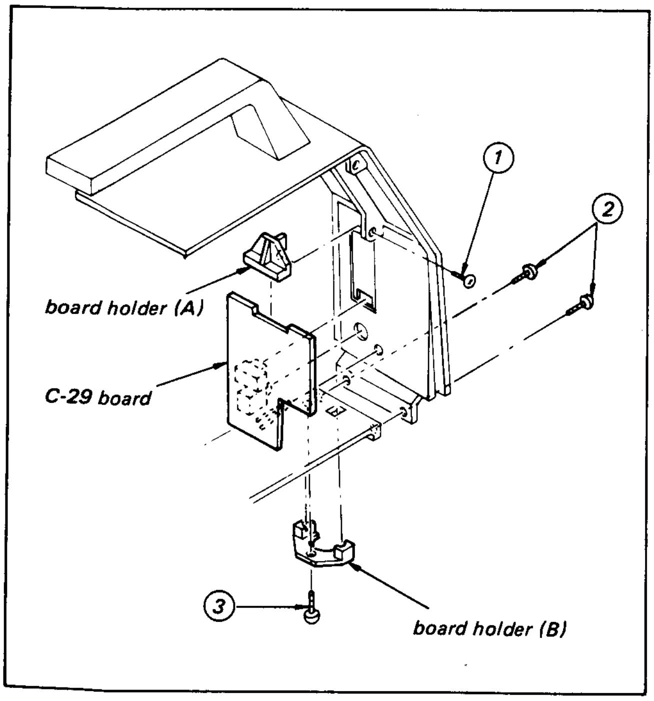
1-7-2. Control Grip Sub-assembly


①
C-55 board
CN-21
①
①

Remove the four screws① and pull the control grip assembly off in the direction of the arrow.

Note: Remove the CN21 connector on the C-55 board.

1-7-3. C-29 Board

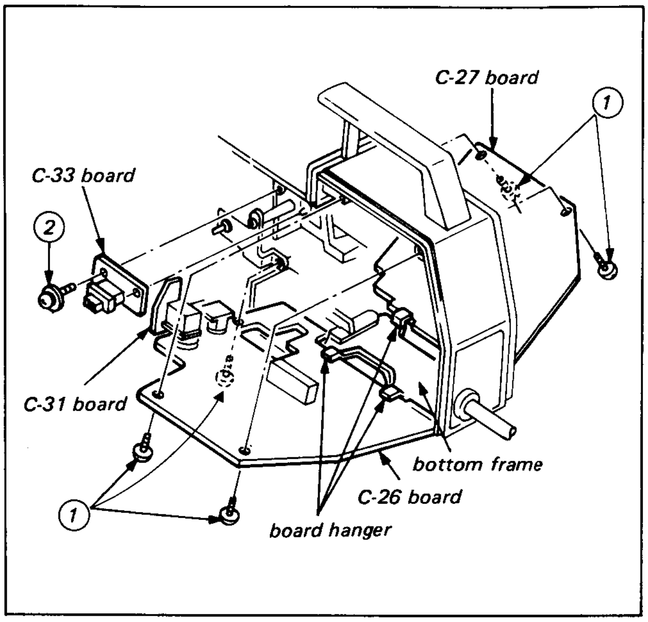

①
②
board holder (A)
C-29 board
③
board holder (B)

1 Remove screw ①and pull out board holder (A).

2 Remove the two screws② and the C-29 board.

3 Remove screw③ and board holder (B).

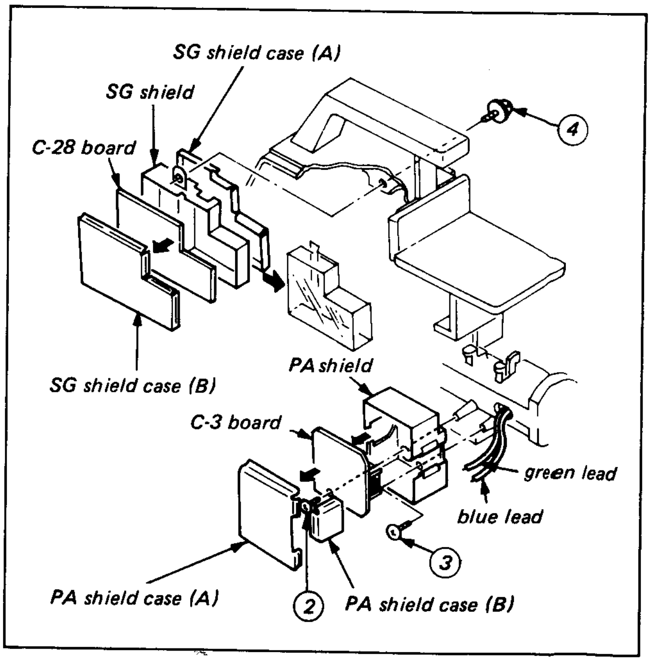
1-7-4. C-26, C-27, C-31, C-33 Boards


C-27 board
①
C-33 board
②
C-31 board
bottom frame
C-26 board
①
board hanger

1 Remove the five screws①and the C-26, C-27 boards and hang them on the bottom frame board hangers.

2 Remove screw② and the C-33 board.

1-7-5. C-3, C-28 Boards


SG shield case (A)
SG shield
C-28 board
④
SG shield case (B)
PA shield
C-3 board
green lead
blue lead
③
PA shield case (A)
②
PA shield case (B)

1 Remove PA shield case (A) and (B). Unsolder the C-3 board and PA shield.

2 Remove screw② and the C-3 board.

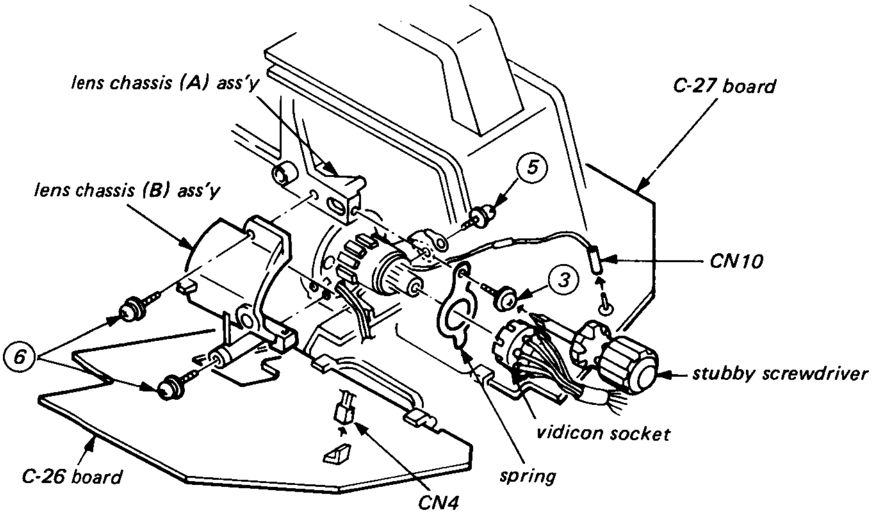
3 Remove screw ③ and the blue and green leads on the C-3 board, and remove the PA shield.

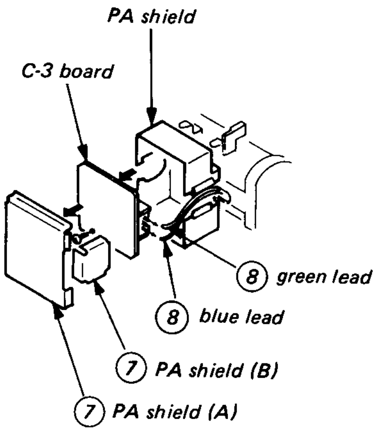
4 Remove screw④ and the SG shield.

5 Remove the SG shield case (B) and unsolder the C-28 board from the shield.

1-7-6. Replacement of Trinicon Tube

1. Removal of Lens Chassis (B) Assembly, Trinicon Tube Retainer, and Wiring


lens chassis (A) ass'y
C-27 board
lens chassis (B) ass'y
⑤
CN10
③
⑥
stubby screwdriver
vidicon socket
C-26 board
spring
CN4


PA shield
C-3 board
⑧ green lead
⑧ blue lead
⑦ PA shield (B)
⑦ PA shield (A)

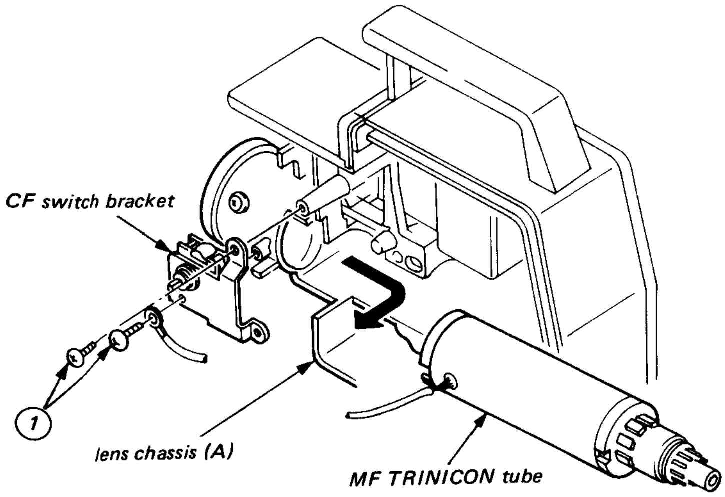
1. *Remove the vidicon socket from the Trinicon tube.*
2. *Disconnect the CN4 connector from the C-26 board.*
3. *Remove screw③and the Trinicon tube retainer.*

Note: If a stubby screwdriver is used when removing screw③, the Trinicon tube retainer can be easily removed.

4. *Disconnect the CN10 connector from the C-27 board.*
5. *Remove screw⑤and the lug terminal.*
6. *Remove the two screws⑥and the lens chassis (B) assembly.*
7. *Remove PA shield lids (A) and (B).*
8. *Disconnect the blue and green leads from the C-3 board.*

Note: The green lead should be above the blue one.

2. Removal of Trinicon Tube

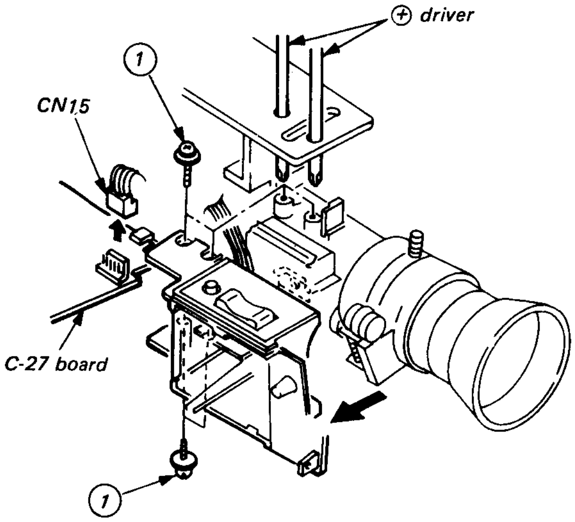

CF switch bracket
①
lens chassis (A)
MF TRINICON tube

1. *Remove the two screws①and the CF switch bracket.*
2. *Pull the Trinicon tube off in the direction of the arrow.*

1-7-7. Replacement of Lens and Motor Driving Unit

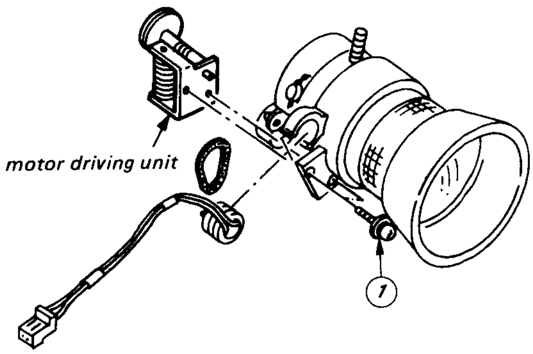
DISASSEMBLY

1. Removal of Grip Holder Assembly


⊕ driver
①
CN15
C-27 board
①

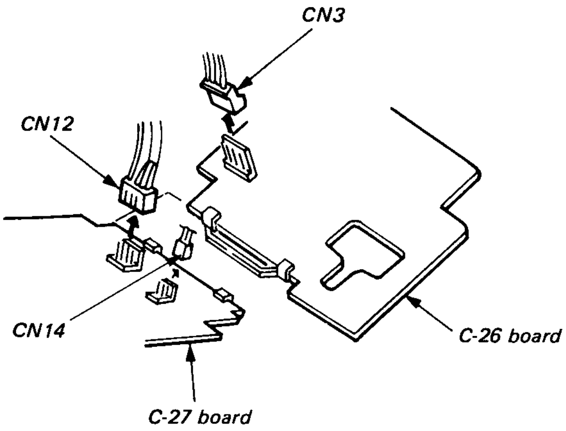
Remove the four screws ① and disconnect the CN15 connector from the C-27 board. Remove the grip holder assembly.

2. Removal of Motor Driving Unit

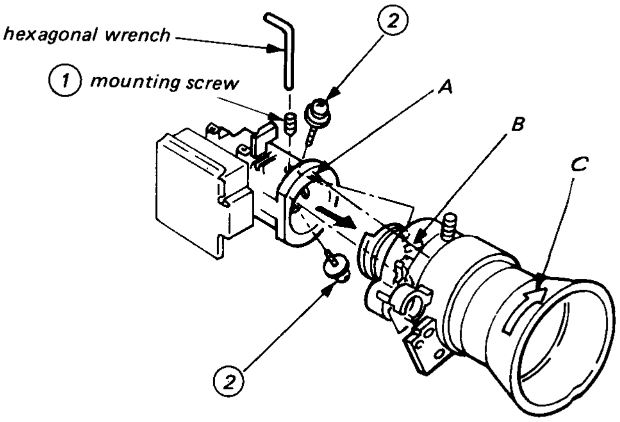

motor driving unit
①

Remove the two screws ① and the motor driving unit.

3. Removal of Iris Motor Wiring (CN3, CN12, CN14) and Zoom Lens


CN3
CN12
CN14
C-26 board
C-27 board

Disconnect the CN2 connector from the C-26 board and the CN12, CN14 connector from the C-27 board.

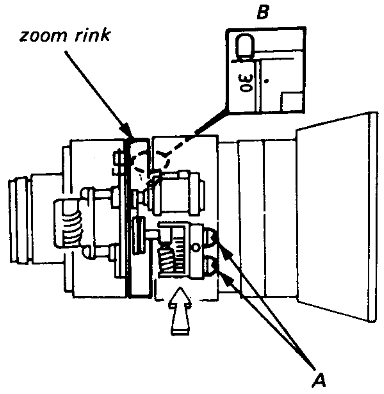

hexagonal wrench
① mounting screw
②
A
B
C
②

1. *Loosen mounting screw ① with a hexagonal wrench.*
2. *Remove the two screws ② and pull the lens off in the direction of the arrow.*

Note: To re-mount, insert A into B and turn clockwise C.

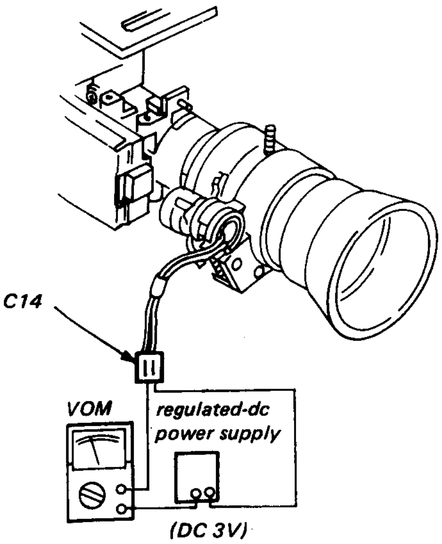
1-7-8. Mounting and Adjustment of Motor Driving Unit

1. Mounting of Motor Driving Unit



1. *Tighten the motor driving unit mounting screw A, but only enough so that the unit can still move.*
2. *Set the zoom scale of the zoom lens to 30mm as shown at B.*
3. *Push the motor driving unit in the direction of the arrow and tighten screw A completely.*

2. Motor Driving Unit Adjustment



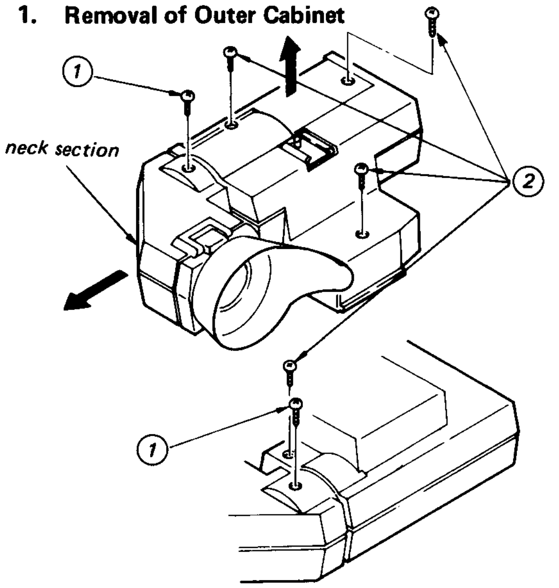
Make the connections shown above and confirm that the fluctuation is within 5mA (± 2.5mA). If the DC current is more than 30mA, repeat step 1.

Note: The DC current flow is approximately 20mA.

1-7-9. Replacement of Electronic Viewfinder CRT

➡ DISASSEMBLY ⇨ INSTALLATION

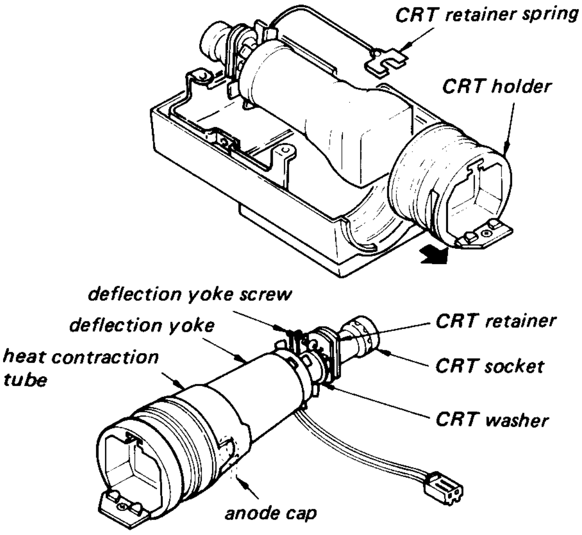
1. Removal of Outer Cabinet


①
neck section
②
①

1. Remove the two screws ① and remove the neck section in the direction of the arrow.

2. Remove the four screws ② and remove the upper case in the direction of the arrow.

2. Removal of CRT


CRT retainer spring
CRT holder
deflection yoke screw
deflection yoke
heat contraction tube
CRT retainer
CRT socket
CRT washer
anode cap

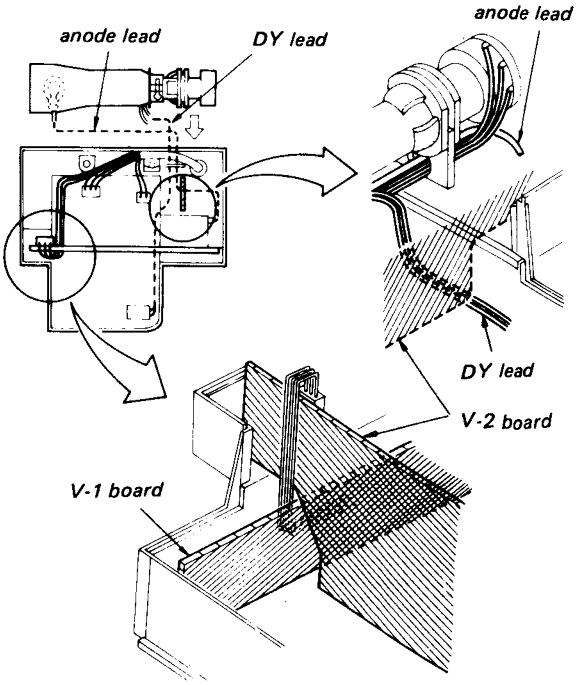
1. Remove the CRT holder in the direction of the arrow. (The CRT retainer spring can be removed also.)

2. Pull the heat contraction tube off of the CRT neck section so that the anode cap can be removed.

3. Remove the CRT socket, retainer and washer.

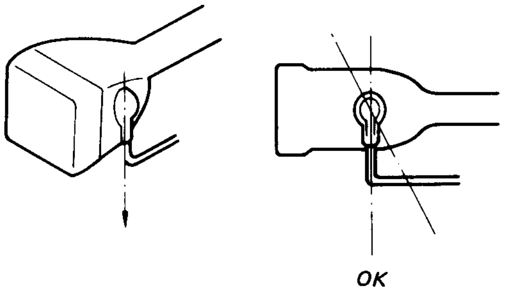
4. Loosen the deflection yoke screw and pull the CRT off of the deflection yoke.

3. Mounting of CRT (2)


anode lead
DY lead
anode lead
DY lead
V-2 board
V-1 board

Be especially careful of the CRT wiring. The DY lead, anode lead and connector to V-2 board must be as shown in the figure.

4. Mounting of CRT (1)



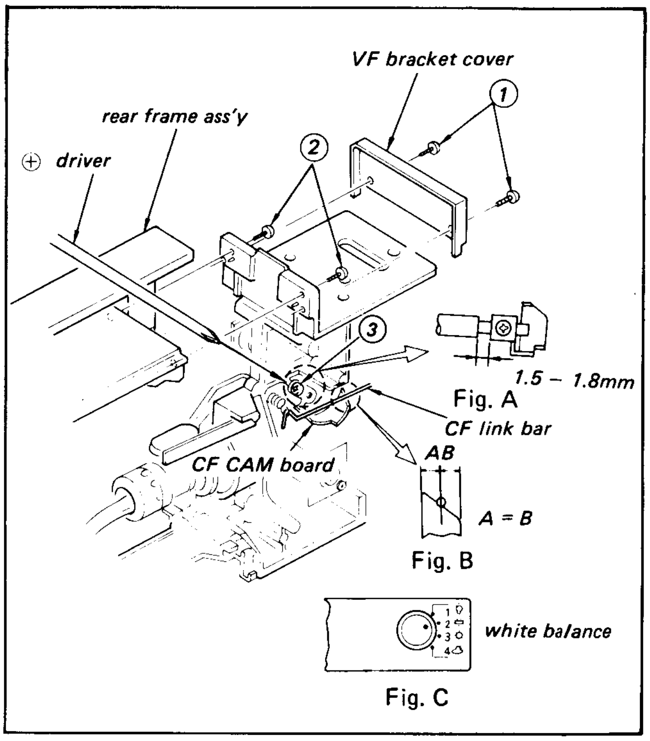
1. Wrap mending tape arouind the DY tightening section of the CRT.

2. After attaching the anode cap to the CRT, wind tape around both of them. Or, cover them with the heat contraction tube and contract using a hair dryer.

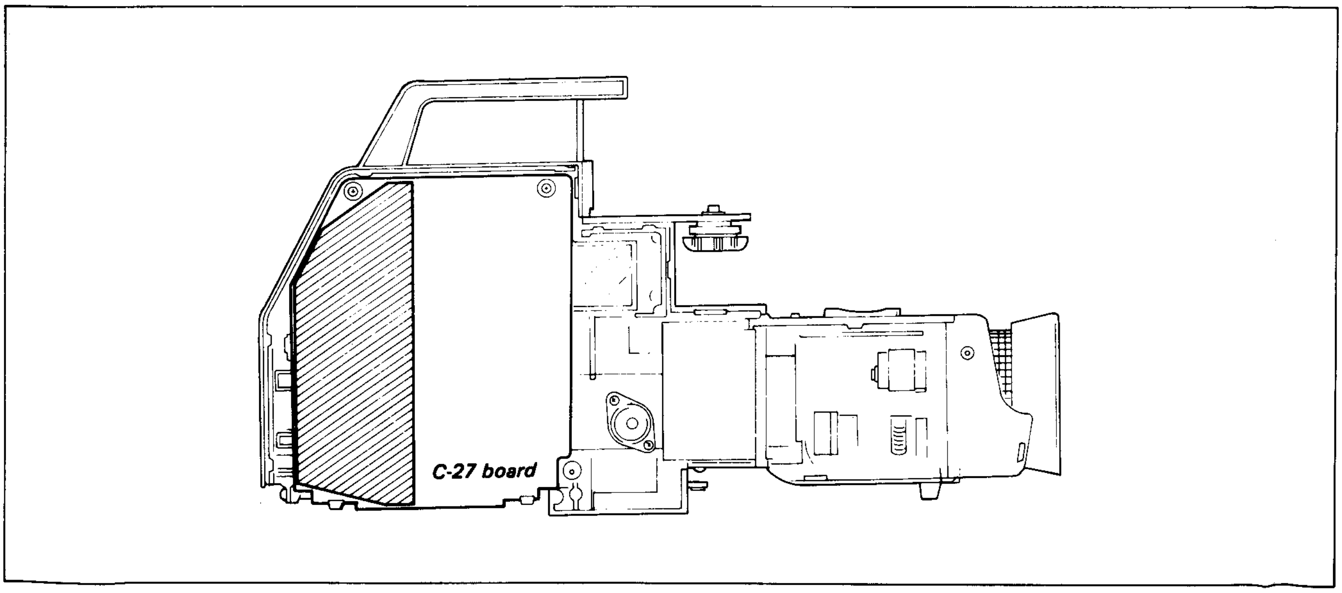
Note: The anode lead should be as shown below.

1-7-10. CR Cam Adjustment

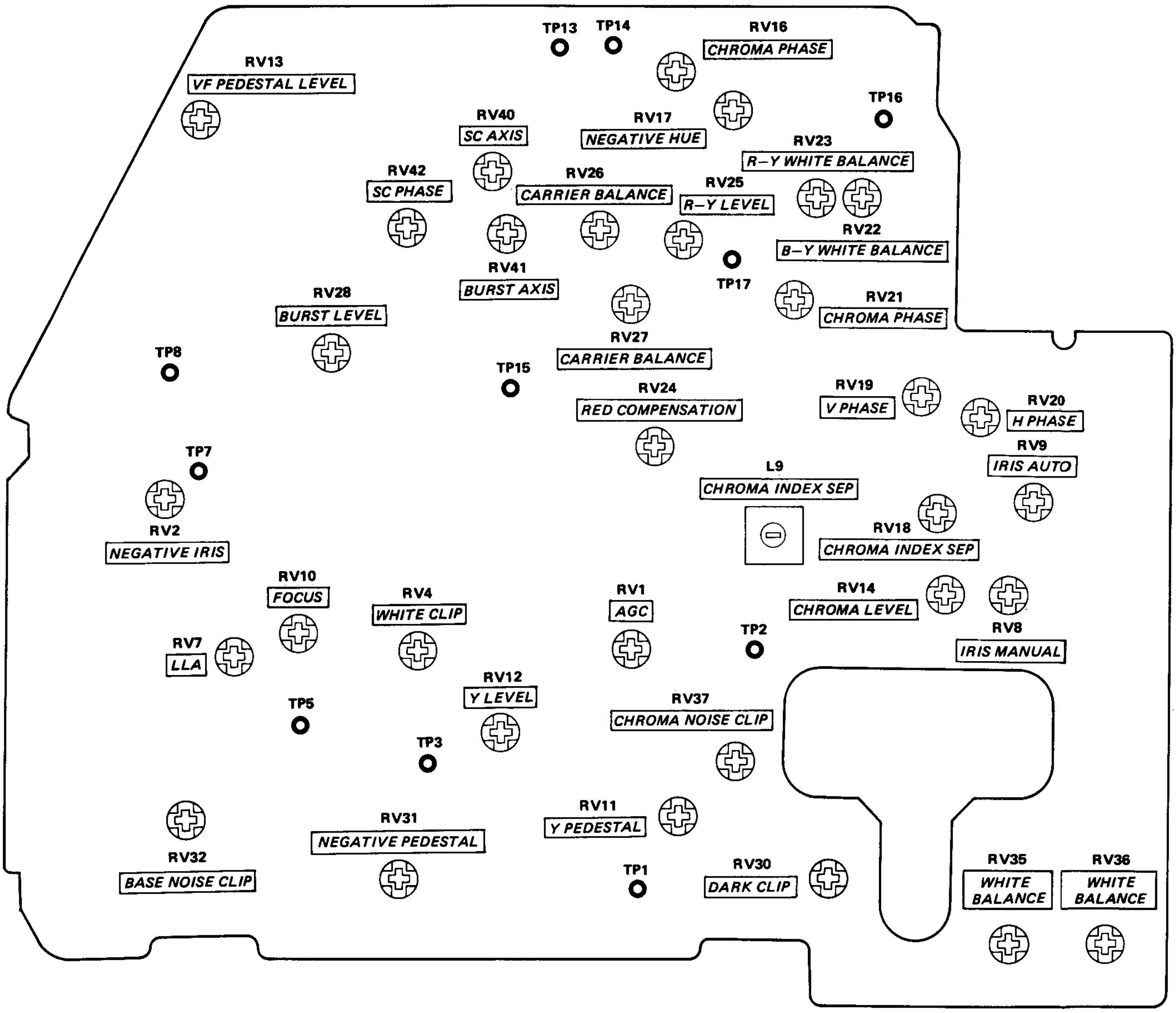
1. Remove the side panels, shoulder pad, control grip sub-assembly, jack panel sub-assembly, C-4 and C-6 boards.
2. Remove screws ① and ②. Remove the VF bracket cover and rear frame assembly.
3. Set the WHITE BALANCE control to [2 ⁂]. (See Figure C)
4. Loosen screw ③ and position the CF cam plate and CF link rod as shown in Figure B. However, the CF cam plate shaft direction should be as shown in Figure A.
5. Tighten screw ③ after completing the adjustment and apply lock paint. Apply grease to the location where the CF cam plate and CF link rod come into contact.


VF bracket cover
①
rear frame ass'y
②
⊕ driver
③
1.5 – 1.8mm
Fig. A
CF link bar
CF CAM board
AB
A = B
Fig. B
1
2
3
4
white balance
Fig. C

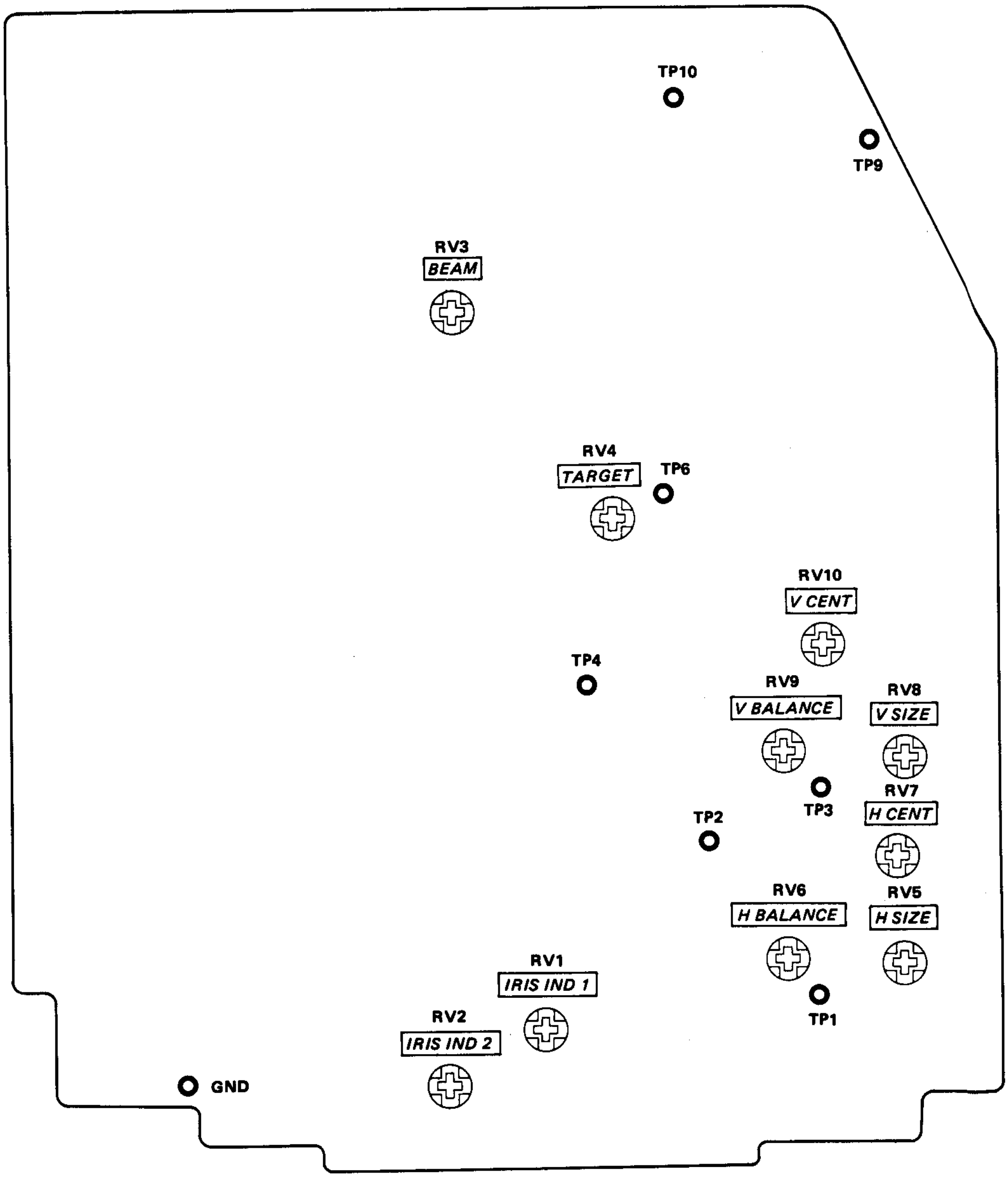
Note: The shaded portion is a high voltage area. There is a danger of electrical shock if this area is touched.



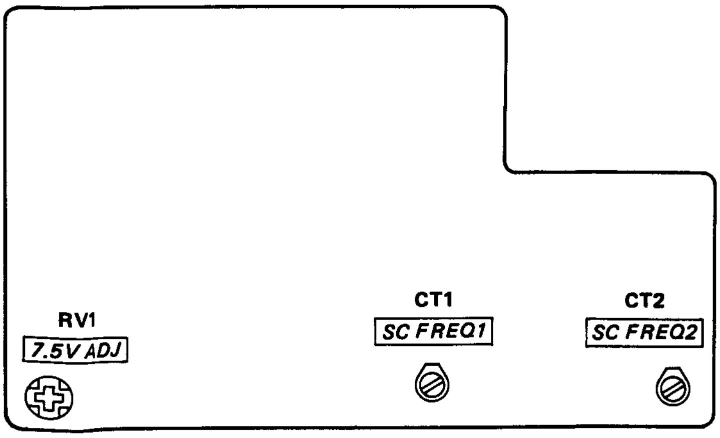
C-26 Board (Component Side)


TP13
TP14
RV16
CHROMA PHASE
RV13
VF PEDESTAL LEVEL
TP16
RV40
SC AXIS
RV17
NEGATIVE HUE
RV23
R–Y WHITE BALANCE
RV42
SC PHASE
RV26
CARRIER BALANCE
RV25
R–Y LEVEL
RV22
B–Y WHITE BALANCE
RV41
BURST AXIS
TP17
RV28
BURST LEVEL
RV21
CHROMA PHASE
RV27
CARRIER BALANCE
TP8
TP15
RV24
RED COMPENSATION
RV19
V PHASE
RV20
H PHASE
RV9
IRIS AUTO
TP7
L9
CHROMA INDEX SEP
RV18
CHROMA INDEX SEP
RV2
NEGATIVE IRIS
RV10
FOCUS
RV4
WHITE CLIP
RV1
AGC
RV14
CHROMA LEVEL
TP2
RV8
IRIS MANUAL
RV7
LLA
RV12
Y LEVEL
TP5
RV37
CHROMA NOISE CLIP
TP3
RV11
Y PEDESTAL
RV31
NEGATIVE PEDESTAL
RV32
BASE NOISE CLIP
TP1
RV30
DARK CLIP
RV35
WHITE BALANCE
RV36
WHITE BALANCE

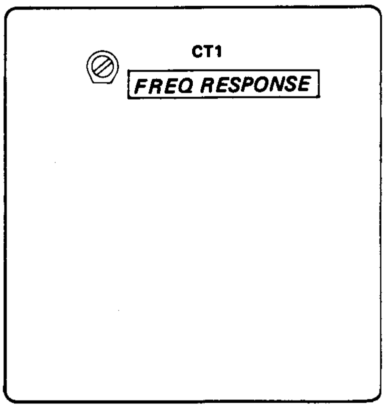
C-27 Board (Component Side)


TP10
TP9
RV3
BEAM
RV4
TARGET
TP6
RV10
V CENT
TP4
RV9
V BALANCE
RV8
V SIZE
TP3
RV7
H CENT
TP2
RV6
H BALANCE
RV5
H SIZE
RV1
IRIS IND 1
TP1
RV2
IRIS IND 2
GND

C-28 Board (Component Side)


RV1
7.5V ADJ
CT1
SC FREQ1
CT2
SC FREQ2

C-3 Board (Component side)

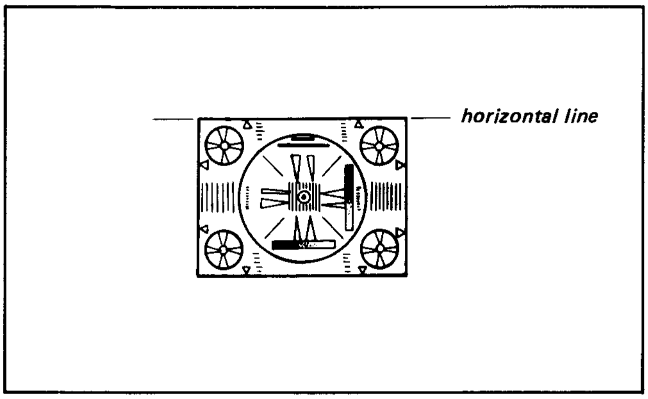

CT1
FREQ RESPONSE

SECTION 2
DEFLECTION SYSTEM ALIGNMENT

2-1. TRINICON TUBE HORIZONTALNESS ADJUSTMENT

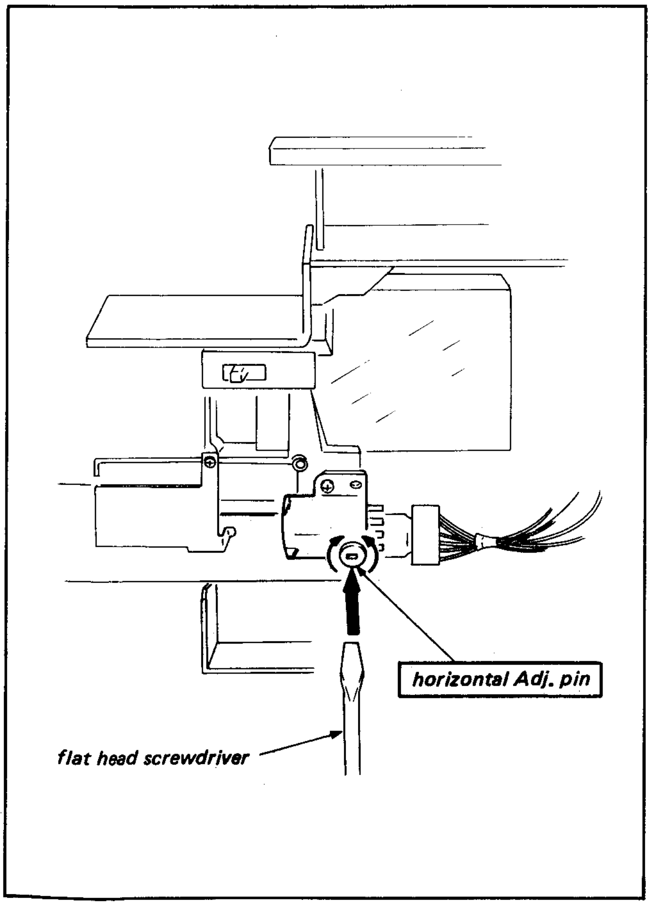
Equipment Required: Pattern box

Subject: Resolution pattern as shown below.


horizontal line

Preparation: Set the subject and the camera horizontally and adjust the focus of the lens on the subject.

Adjustment: Adjust the horizontalness adjusting screw shown in the figure below while observing the monitor screen for horizontalness.


horizontal Adj. pin
flat head screwdriver

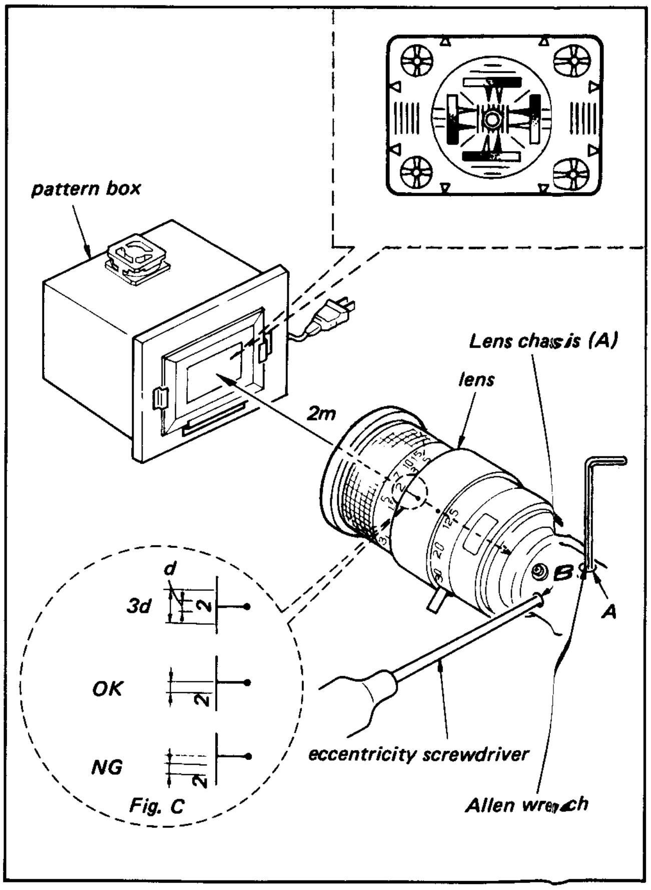
Specification: ± 3°

2-2. FLANGE BACK ADJUSTMENT

Equipment Required:
Pattern box
Eccentricity screwdriver
Allen wrench

Adjustment Procedure:

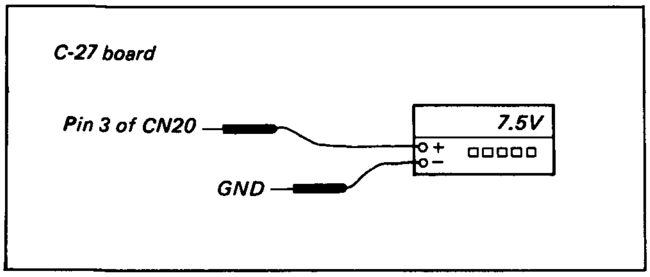
1. Set the focus ring of the lens to 2 meters.
2. Place the pattern box at the point 2 meters apart from the front end of the lens (not including the lens hood).
3. Set the focus distance to 12.5 mm, wide-angle side.
4. Loosen master lens lock screw A.
5. Insert the eccentricity screwdriver into flange adjustment hole B and perform the adjustment while observing the monitor.
6. Tighten master lens lock screw A.
   Be careful for tightening the screw because the flange back tends to very.
7. Set the focus distance to 75 mm, telephoto side.
8. Turn the focus ring for adjusting the focus.
9. Confirm that the distance scale does not apart from 2 m mark as shown in the figure.
10. If distance scale is apart much from the 2 m mark, repeat the adjustment again.


pattern box
Lens chassis (A)
lens
2m
B
A
d
3d
OK
NG
Fig. C
eccentricity screwdriver
Allen wrench

2-3. +7.5 V POWER SUPPLY VOLTAGE ADJUSTMENT

Equipment Required: Volt-ohm meter or digital voltmeter

Adjustment: Connect the volt-ohm meter or the digital voltmeter to Pin 3 of CN20 on the C-27 board and adjust RV1 on the C-28 board for 7.5V.
⊘ RV1/C-28 board

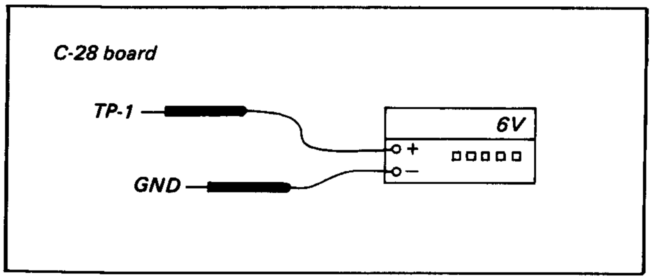


Specification: 7.5 V ± 0.1 V

2-4. +6V POWER SUPPLY VOLTAGE ADJUSTMENT

Equipment Required: Volt-ohm meter or digital voltmeter

Adjustment: Connect the volt-ohm meter or the digital voltmeter to TP1 on the C-28 board and adjust RV2 on the C-28 board for 6V.
⊘ RV2/C-28 board



Specification: 6V ± 0.1V

2-5. TARGET VOLTAGE ADJUSTMENT TARGET

Equipment Required: Volt-ohm meter or digital voltmeter

Adjustment Point: TP6/C-27 board
⊘ RV4/C-27 board

Specification: Designated voltage for Trinicon tube plus 2 V within ± 0.3 V

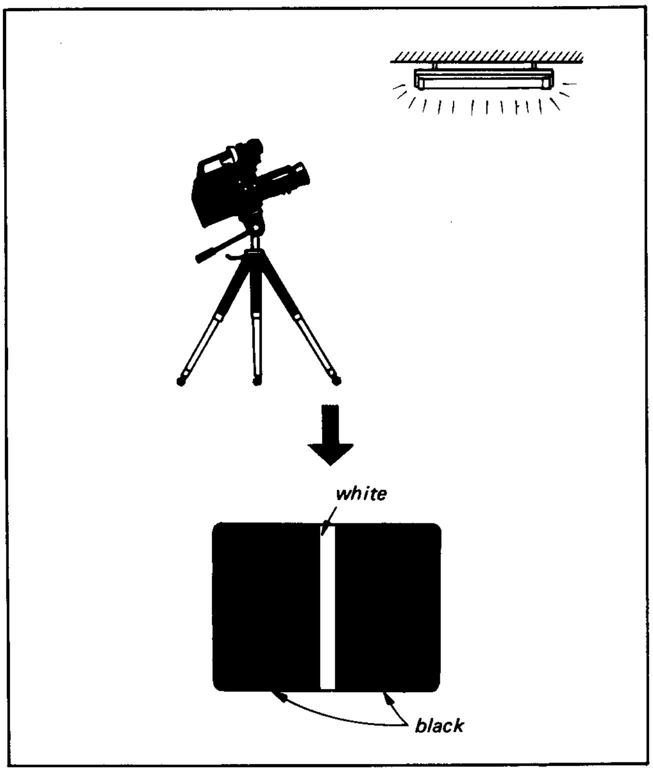
Note: The designated voltage differs depending on a tube and the voltage specific for a tube is indicated on the tube.

2-6. BEAM ADJUSTMENT BEAM

Equipment Required: Oscilloscope

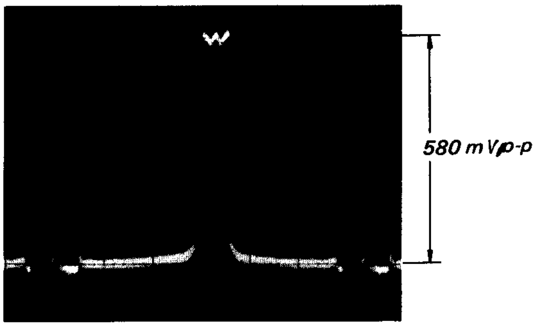
Subject: Shoot a flourescent lamp with the picture frame shown below.

Note: The adjustment should be done after more than five minutes from the turning-on of the power.



Preparation: Turn RV8 and RV9 on the C-26 board fully clockwise. Set the IRIS control to VARIABLE and turn it fully counterclockwise.

Adjustment Point: TP1/C-26 board.
⊘ RV3/C-27 board 580 mV(p-p)



Specification: 580 ± 20 mV(p-p)

Note: Adjust the Automatic Iris Adjust ment in Section 3-2 after the beam adjustment.

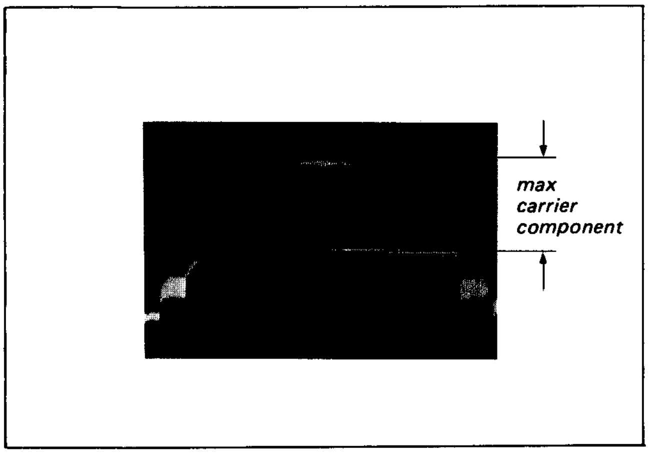
2-7. FOCUS ADJUSTMENT FOCUS

Equipment Required: Oscilloscope
Red filter
Pattern box

Subject: White pattern

Lens: Attach the red filter to the lens.

Adjustment Point: TP1/C-26 board


max
carrier
component

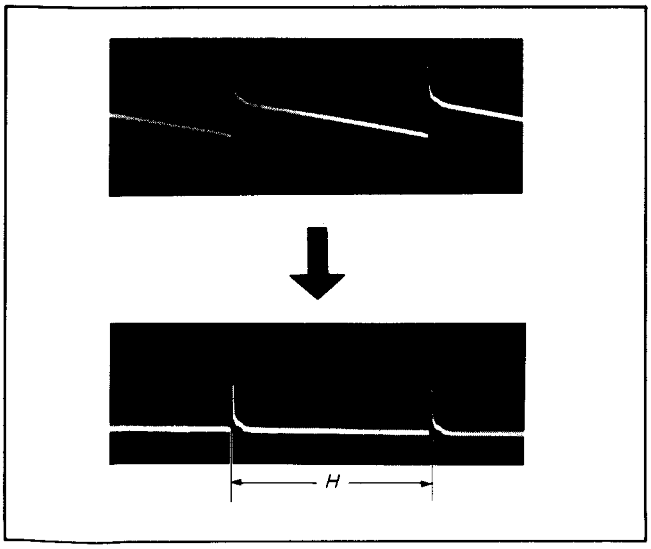
● RV10/C-26 board
Make the carrier component maximum.

Note: Adjust the H Centering Adjustment in Section 2-10 after the focus adjustment.

2-8. H. BALANCE

Equipment Required: Dual-trace oscilloscope

Adjustment Point:
TP1/C-27 board ──► CH1 } Set the oscilloscope to the ADD
TP2/C-27 board ──► CH2 } mode.



● RV6/C-27 board Make the waveform as flat as possible.

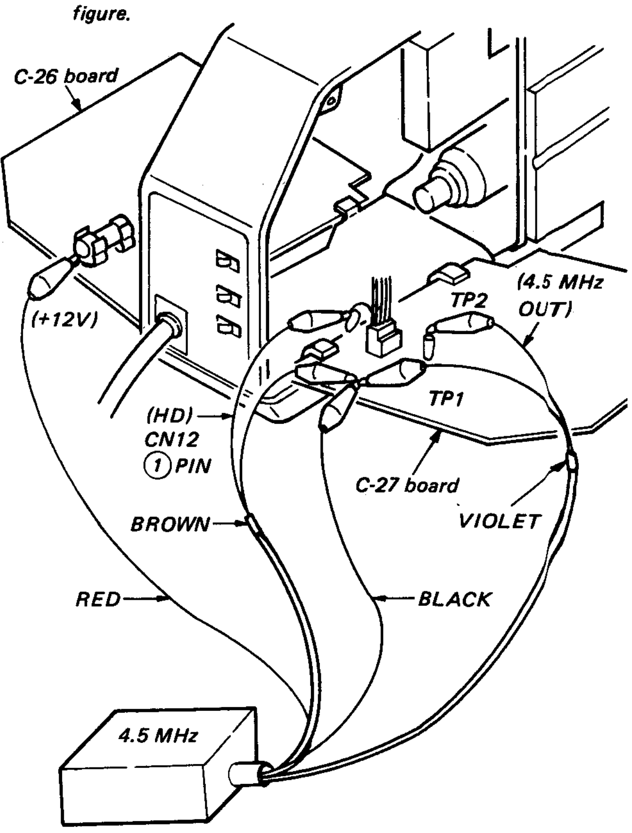
2-9. H. SIZE ADJUSTMENT

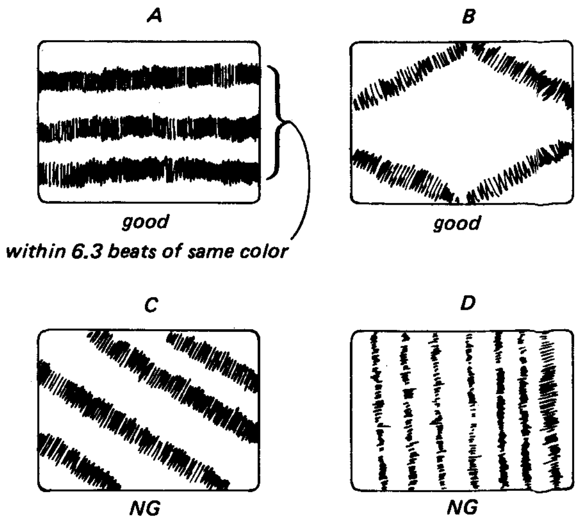
Equipment Required: 4.5 MHz Oscillator jig, Pattern box

Subject: Overall black (Make a black cap and put it on the lens.)

Adjustment: Place 4.5 MHz oscillating jig near the input of the pre-amplifier or connect the 4.5 MHz output to TP2/C-27 board. Turn RV5/C-27 board so that the color monitor picture becomes A or B shown in the figure.

Connect the 4.5 MHz oscillating jig as shown in the figure.


C-26 board
(+12V)
TP2
(4.5 MHz OUT)
TP1
(HD)
CN12
①PIN
C-27 board
BROWN
VIOLET
RED
BLACK
4.5 MHz

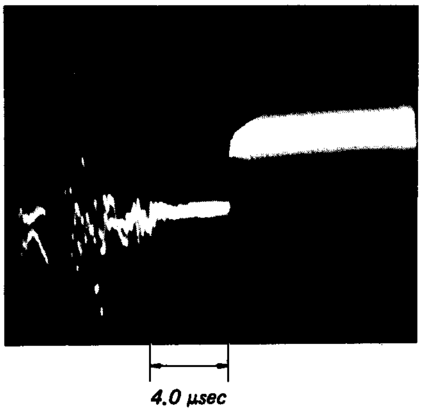

A
B
good
good
within 6.3 beats of same color
C
D
NG
NG

2-10. H. CENTERING ADJUSTMENT H. CENT

Equipment Required: Oscilloscope
Pattern box

Subject: Overall white pattern

Adjustment Point: TP1/C-26 board



⊘ RV7/C-27 board
Black mask width .... 4.0 μsec

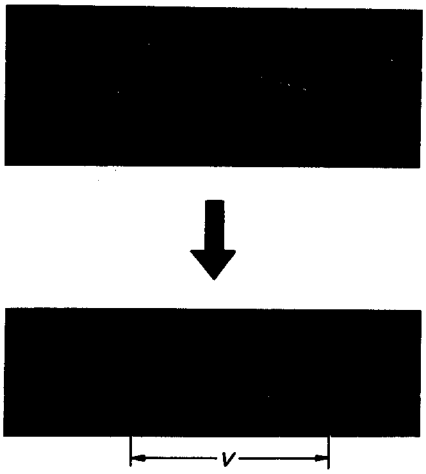
Specification: 4.0 ± 0.2 μsec

Note: Confirm after the adjustment that there are no black masks on the right and left sides of the color monitor picture.

2-11. V. BALANCE

Equipment Required: Dual-trace oscilloscope

Adjustment Points:
TP3/C-27 board → CH1 } Set the oscilloscope to the ADD
TP4/C-27 board → CH2 } mode.



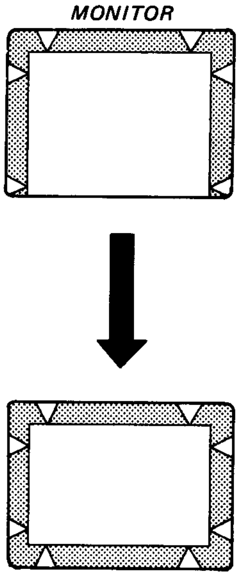
⊘ RV9/C-27 board Make the waveform as flat as possible.

2-12. V. SIZE ADJUSTMENT

Equipment Required: Pattern box

Subject: Overall white pattern

Adjustment Point: ⊘ RV8/C-27 board



Match the both sides of the pattern and its top by zooming the lens as shown in the figure left.

Match the bottom frame of the pattern and the bottom of the monitor screen.

2-13. V. CENTERING ADJUSTMENT

Equipment Required: Pattern box

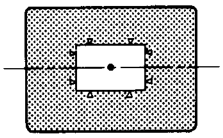
Subject: Overall white pattern

Preparation: Set the lens to the telephoto range and adjust the focus.

Adjustment: Monitor

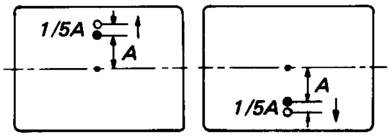
Adjustment Procedure:

①



1. *Match the center axis of the pattern and the lens axis. Set the lens to the wide-angle range. Bring the center mark of the overall white pattern on the center mark of the monitor screen.*

②

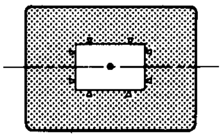


shift upward *shift downward*

C-27 Board ⊘ RV10

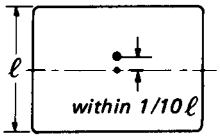
2. *Set the lens to the telephoto range. If the picture center deviates from the center of the overall white pattern in the direction of the deviation by 1/5 of A, deviated distance of the center.*

③



3. *Set the lens to the wide-angle range and match the center axis of the overall white pattern and the lens axis. March the center of the overall white pattern and the center of the picture.*

④



4. *Set the lens to the telephoto range and confirm that the deviation of the overall white pattern center from the picture center is within 1/10 of the vertical size of the picture ℓ.*

Note: If the deviation is more than 1/10ℓ, repeat the adjustment.

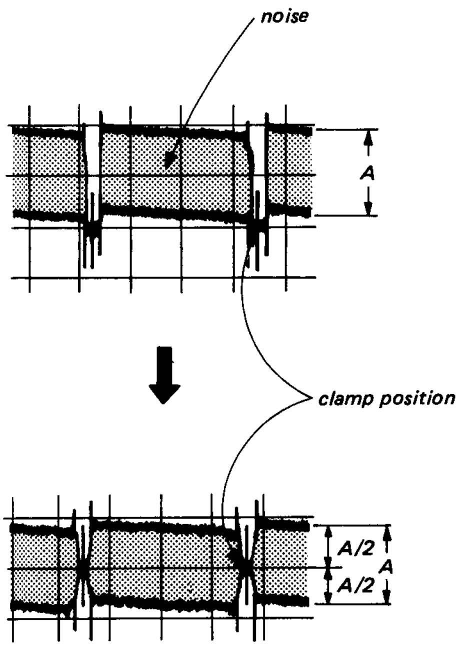
SECTION 3
Y SYSTEM ALIGNMENT

3-1. DARK CLIP ADJUSTMENT

Equipment Required: Oscilloscope

Adjustment Point:
TP2/C-26 board
⊘ RV30/C-26 board
IRIS control: Set the IRIS control to VARIABLE and set it to CLOSE.

Adjust RV30 on the C-26 board so that the clamp position is located in the center of noise amplitude.

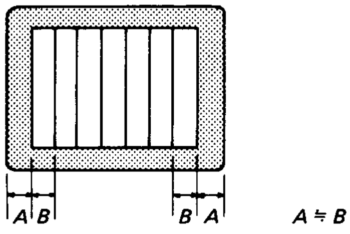


Note: After adjustment, set the IRIS control to AUTO (pushed-in).

3-2. AUTOMATIC IRIS ADJUSTMENT

Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.



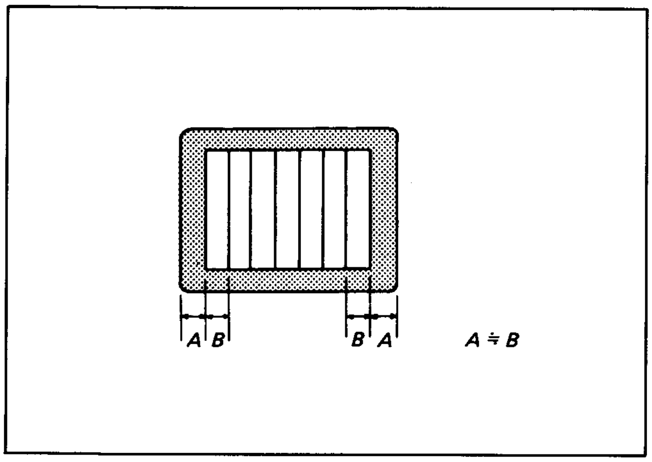
Adjustment Point:
TP1/C-26 board
IRIS control: Set the IRIS control to VARIABLE and set it to the mechanical center [green ■].
⊘ RV8/C-26 board 290 mV(p-p)
↓
IRIS control: AUTO (pushed-in)
⊘ RV9/C-26 board 290 mV(p-p)

Specification: 290 ± 10 mV(p-p)

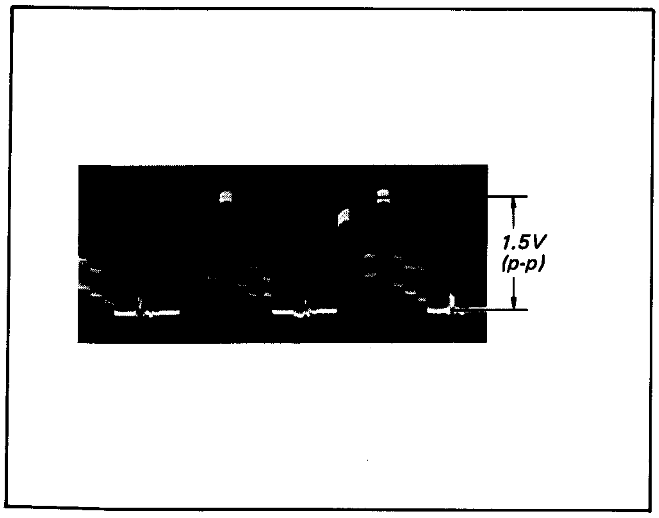
3-3. AGC ADJUSTMENT AGC

Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.



Adjustment Point:
TP2/C-26 board
⊘RV1/C-26 board; 1.5V(p-p)

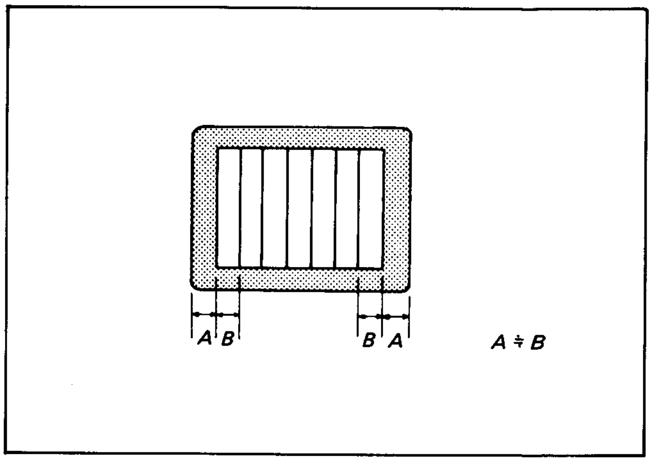


Specification: 1.5 ± 0.1V(p-p)

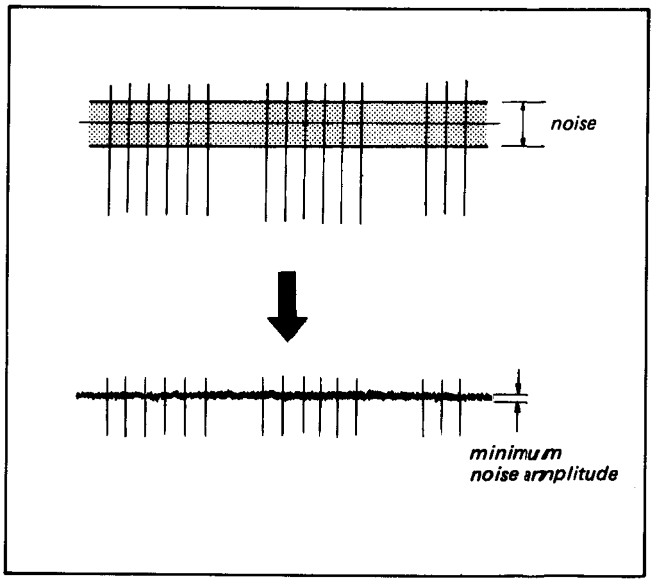
3-4. BASE NOISE CLIPPER ADJUSTMENT

Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.



Adjustment Point: TP5/C-26 board


noise
minimum
noise amplitude

⊘RV32/C-26 board

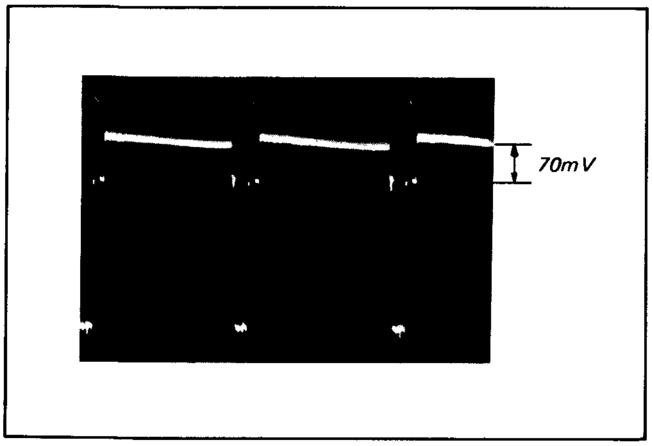
3-5. PEDESTAL ADJUSTMENT

Equipment Required: Oscilloscope
Black cap

Subject: Overall black (Attach the black cap on the lens.)

Preparation: SENSITIVITY selector LOW
Set the IRIS control to VARIABLE and set it to CLOSE.

Adjustment Point: TP8/C-26 board



⊘ RV11/C-26 board: 70 mV

Specification: 70 ± 10 mV

Note: After adjustment, set the SENSITIVITY selector to AUTO (green ■) and IRIS control to AUTO (pushed-in).

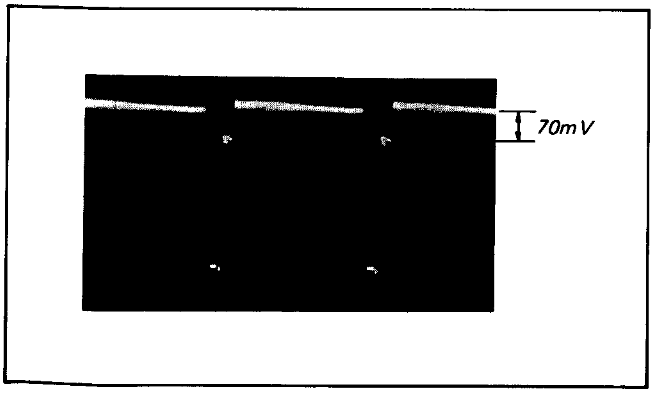
3-6. EVF PEDESTAL ADJUSTMENT

Equipment Required: Oscilloscope
Black cap

Subject: Overall black (Attach the black cap on the lens.)

Preparation: SENSITIVITY selector LOW

Adjustment Point: TP7/C-26 board



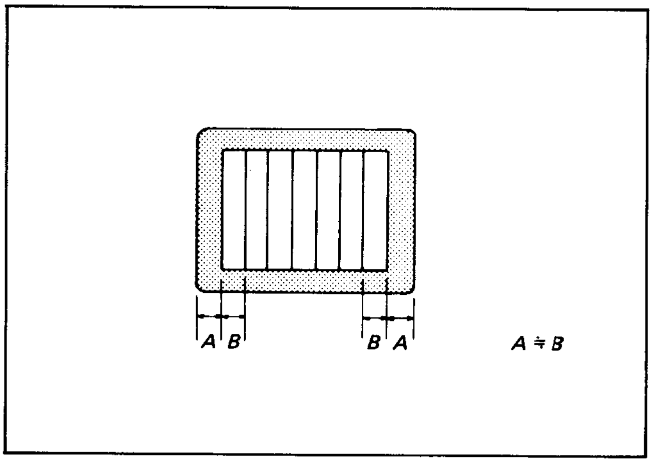
⊘ RV13/C-26 board: 70 mV

Specification: 70 ± 20 mV

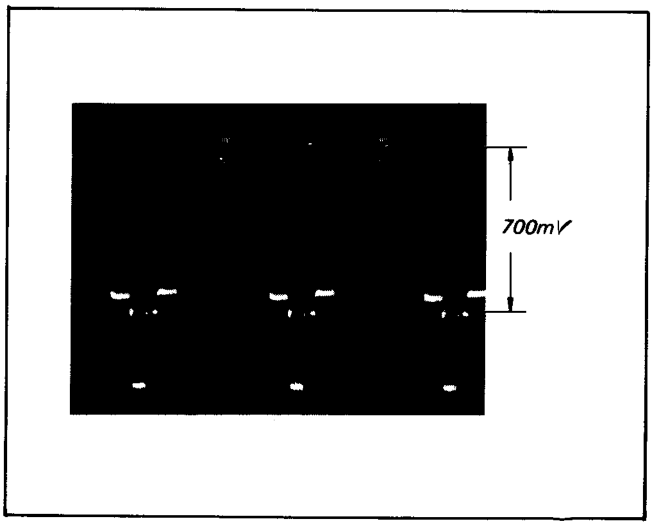
3-7. Y OUTPUT LEVEL ADJUSTMENT

Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.



Adjustment: TP8/C-26 board



⊘ RV12/C-26 board: 700 mV

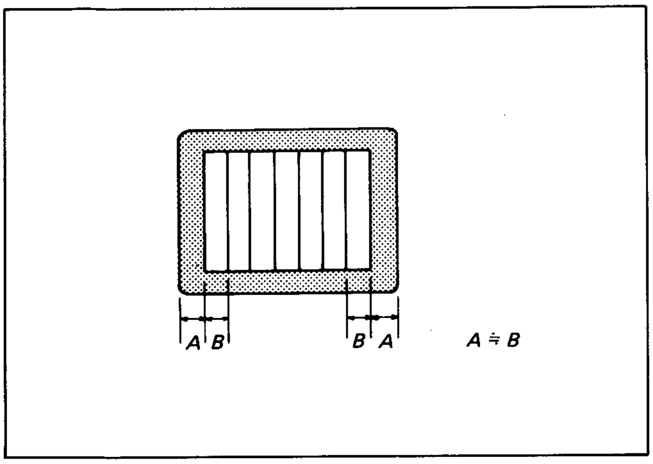
Specification: 700 ± 30 mV

3-8. KNEE ADJUSTMENT (WHITE CLIP ADJUSTMENT)

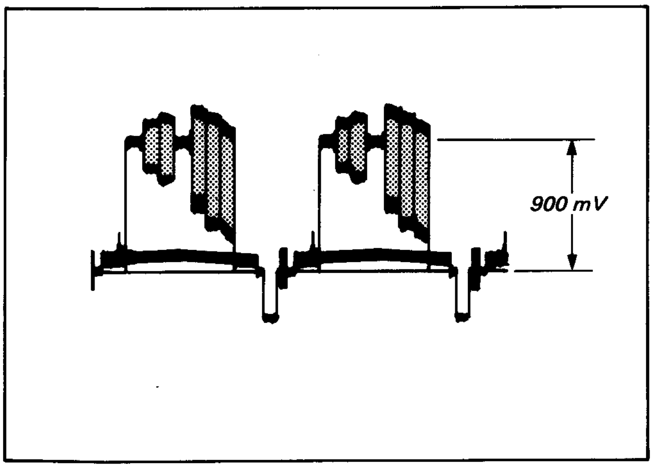
Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.

Preparation: SENSITIVITY selector HIGH



Adjustment Point: TP8/C-26 board



⊘ RV4/C-26 board: 900 mV

Specification: 900 ± 40 mV

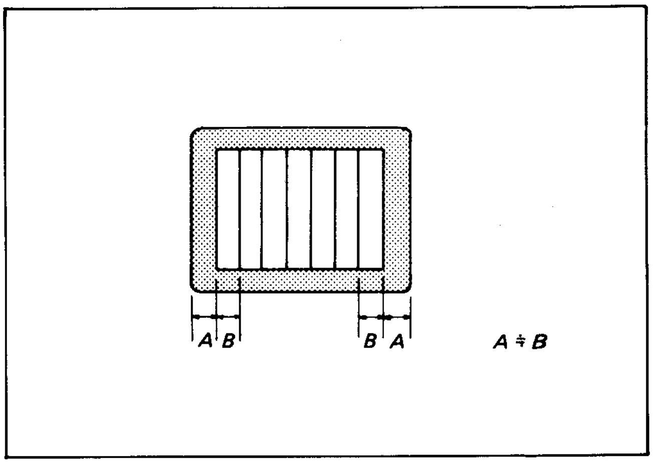
Note: After adjustment, set the SENSITIVITY selector to AUTO (green ■).

3-9. NEGATIVE PEDESTAL ADJUSTMENT

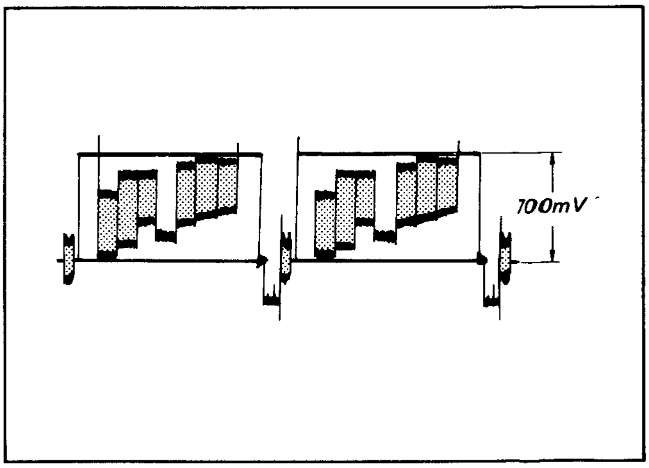
Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.

Preparation: Video selector REVERSE
SENSITIVITY selector LOW



Adjustment Point: TP8/C-26 board



⊘ RV31/C-26 board

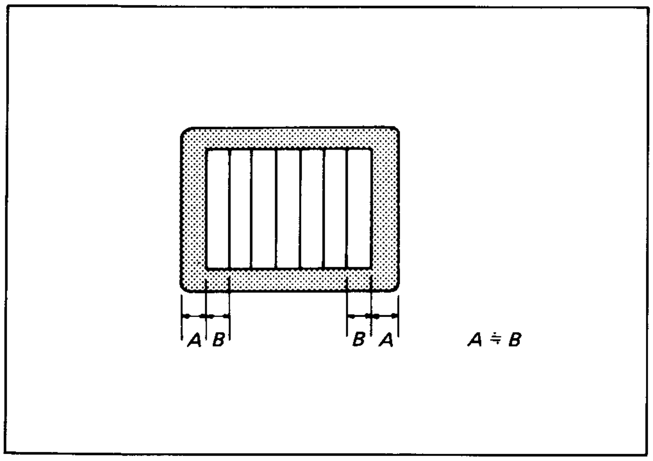
Specification: 700 ± 30 mV

3-10. NEGATIVE IRIS ADJUSTMENT

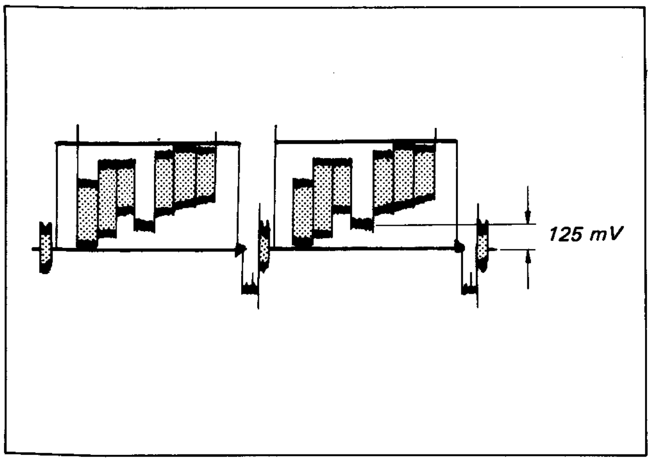
Equipment Required: Oscilloscope
Pattern box

Subject: Color bar as shown below.

Preparation: SENSITIVITY selector LOW IRIS control
AUTO (push in)
↓
Turn it to center click point
↓
VARIABLE (pull out)
↓
Turn it fully Counterclockwise
↓
AUTO (push in)



Adjustment Point: TP8/C-26 board



⊘ RV2/C-26 board

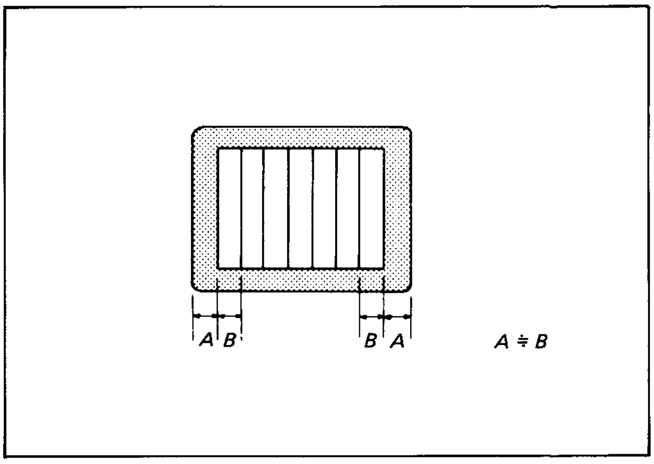
Specification: 125 ± 25 mV

3-11. LOW LIGHT ALARM ADJUSTMENT LLA

Equipment Required: Oscilloscope
Pattern box

Subject: Color bar as shown below.

Preparation: Connect EVF to the VF connector.



Adjustment:

Put a 1.3 ND filter (transmittance of 5%) on the front of the lens, turn ⊘ RV7 on the C-26 board fully clockwise and then turn it slowly counterclockwise to make the EVF LLA indicator lamp light up.
Remove the ND filter and check that the LLA lamp goes off.
Then put the ND filter to the lens again and check that the LLA lamp lights up.

Note: Notice that it takes two or three seconds to light up or go off.

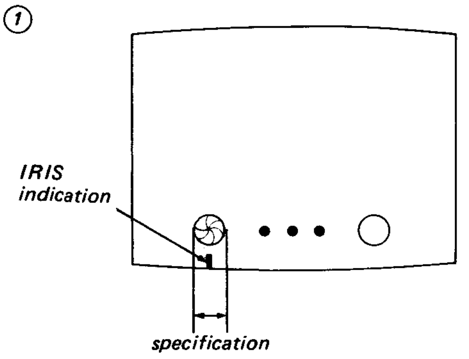
3-12. IRIS ADJUSTMENT OF ELECTRONIC VIEWFINDER

Subject: Overall black (Attach the black cap on the lens.)

Preparation: Connect the EVF to the camera and set the indication switch on the EVF to [IRIS].

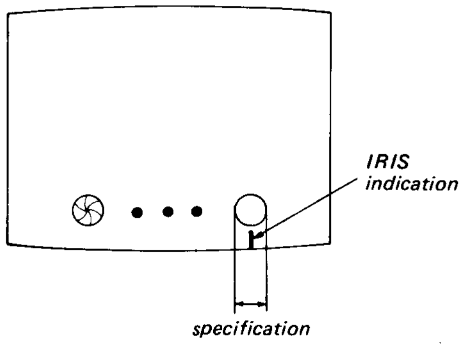
Adjustment:

①


IRIS
indication
specification

● *RV2/C-27 board*
Set RV2 to its mechanical center. Pull the IRIS knob and turn the knob to [CLOSED] (fully clockwise position).
● *RV1/C-27 board*
Adjust RV1 for the value shown above.

②


IRIS
indication
specification

Set the IRIS knob to [OPEN].
● *RV2/C-27 board*
Adjust RV2 for the value shown above.

Note: After adjustment, set the IRIS control to AUTO (pushed-in).

SECTION 4
CHROMA SYSTEM ALIGNMENT

Note that the values are the ones when a radius of the outer circle of the vectorscope is 40 mm.

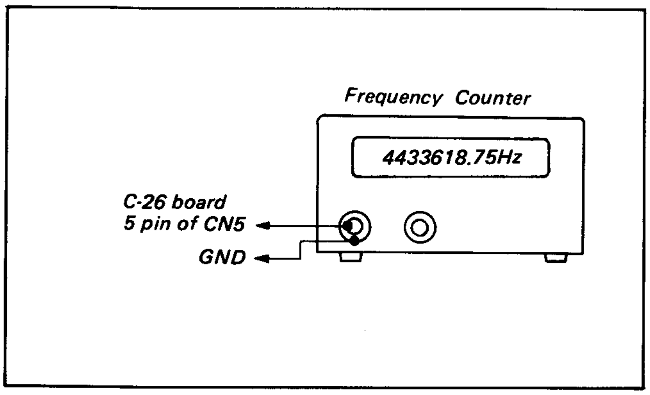
4-1. SUB-CARRIER FREQUENCY ADJUSTMENT

This adjustment should be done before CHROMA SYSTEM adjustment.

Equipment REquired: Frequency Counter

Adjustment Point: 5 pin of CN5/C-26 board

Note: This adjustment should be done after more than 20 minutes from the turning-on the power.



●CT1/C-28 board: 4433618.75Hz
Specification: 4433618.75Hz

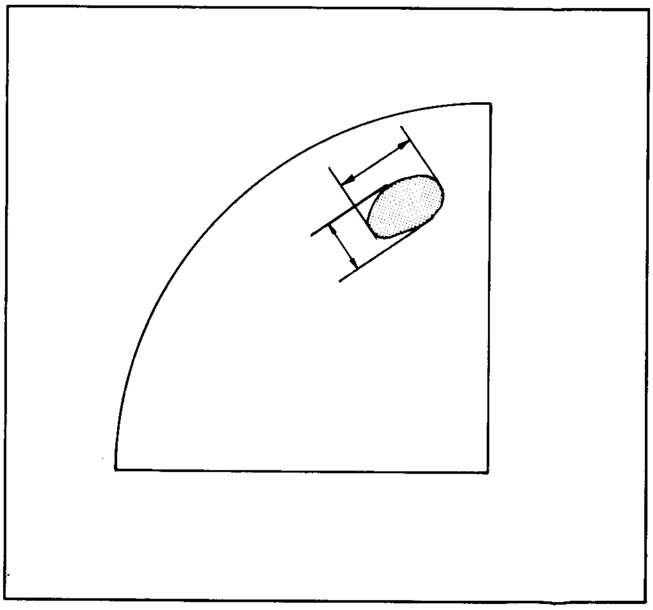
4-2. VH PHASE CORRECTION

Equipment Required: Pattern box
Vectorscope
Red filter

Subject: White pattern

Preparation: Attach the red filter on the lens.
Set the zoomlens to the center between the wide angle and the telephoto side.

Adjustment Point:
● RV19 and RV20/C-26 board: Make the RED spot small.



Specification: The extent of the hue should be within 40°.

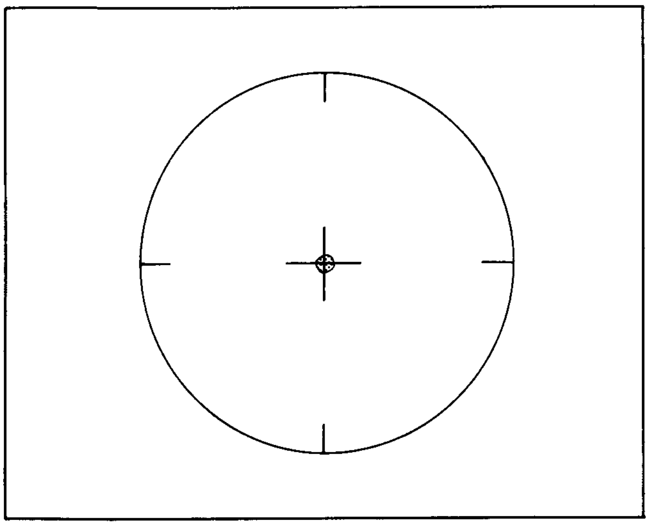
4-3. CARRIER BALANCE ADJUSTMENT

Equipment Required: Vectorscope
Black cap

Subject: Overall black

Preparation: Attach the black cap on the lens.
SENSITIVITY selector LOW

Adjustment Point: Adjust should be made so that the luminance point equivalent to black on the vectorscope comes to the center of the scale.
⊘RV26 & RV27/C-26 board

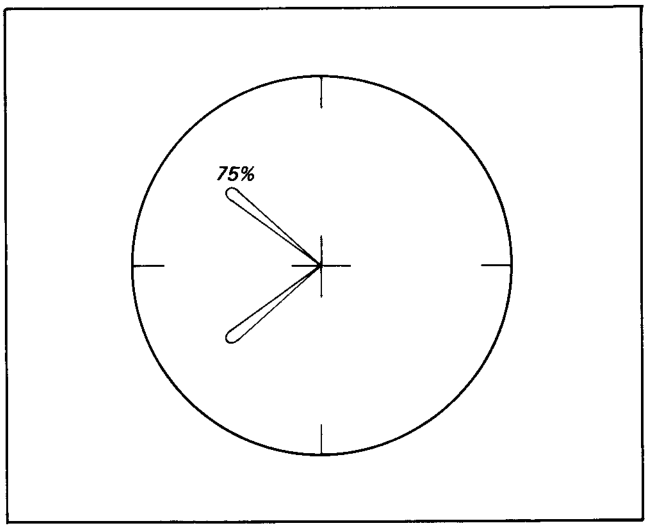


Specification: The luminance point should be within 1.5mm from the center.

4-4. BURST LEVEL ADJUSTMENT

Equipment Required: Vectorscope

Adjustment: Adjust the following RVs so that the burst level and the phase shift are within 1mm on the scale of the vectorscope.
⊘RV28: Burst level
⊘RV41: Burst phase

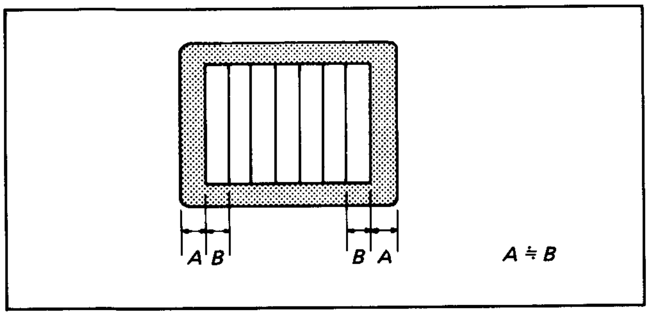


Specification: ± 1 mm for the 75% of the scale.

4-5. CHROMA INDEX SEPARATION ADJUSTMENT

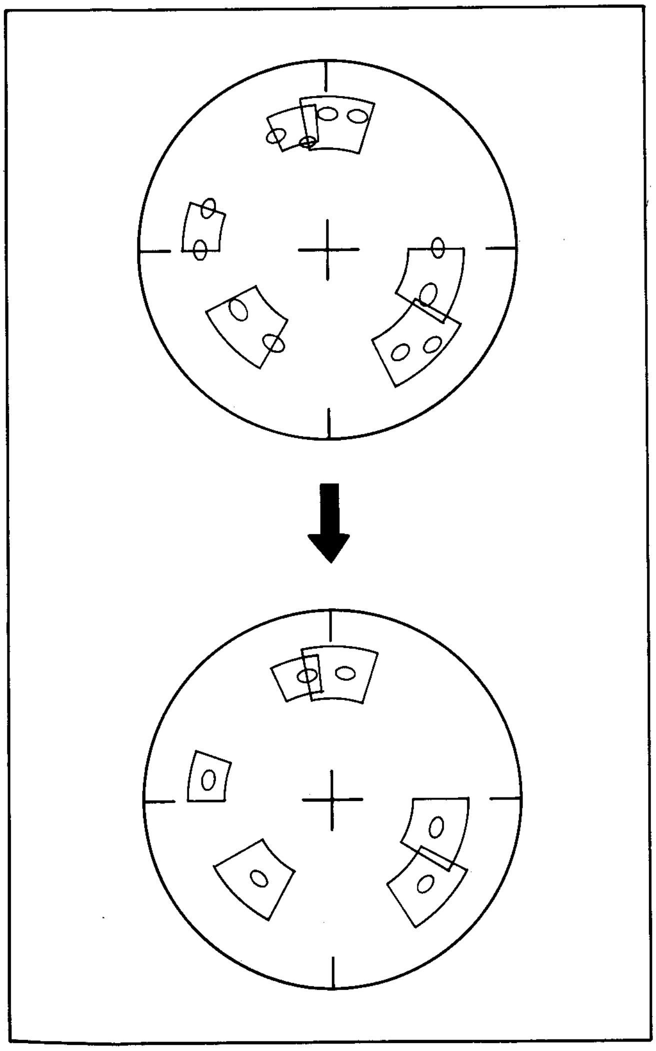
Equipment Required: Pattern box
Vectorscope

Subject: Colour bar as shown below.



Adjustment Point:

⊘ RV18, & L9/C-26 board:
Adjustment should be done so that the luminance points are superimposed on as much as possible.

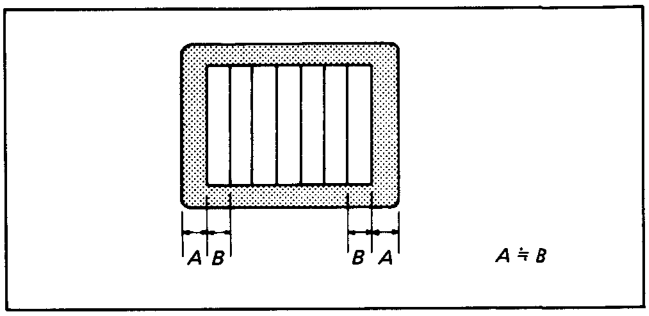


Note: Adjust L9 so that the core of L9 does not come out.

4-6. WHITE BALANCE TENTATIVE ADJUSTMENT

Equipment Required: Pattern box
Vectorscope

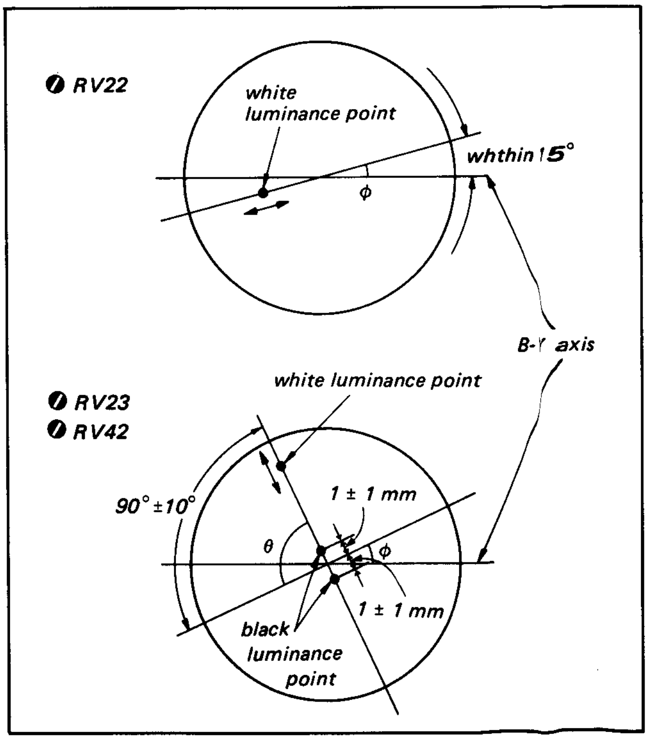
Subject: Colour bar as shown below.



Preparation: Set the FINE tuning control of the white balance to [Green ▬] and the WHITE BALANCE control to [1☼].

Adjustment:

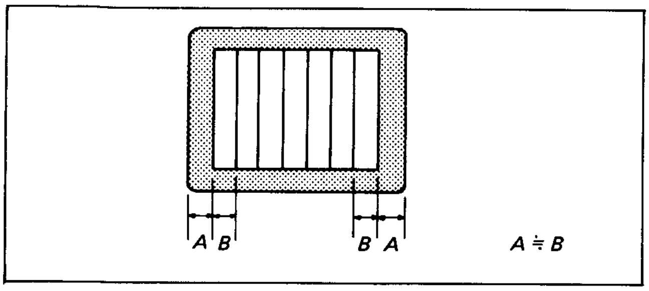
1. Turn RV22 on the C-26 board and confirm that the white luminance point moves within ±15° around the B-Y axis. Adjust the point comes to the center.
2. Adjust RV42 on the C-26 board so that the white luminance point moves within 90° ± 10° against the movement in Adjustment 1 when RV23 is turned.
3. Adjust RV23, RV22 and RV42 on the C-26 board so that the luminance point corresponding to the white of the colour bar comes to the origin.


⊘ RV22
white luminance point
whthin 15°
ϕ
B-Y axis
white luminance point
⊘ RV23
⊘ RV42
90° ±10°
1 ± 1 mm
θ
ϕ
1 ± 1 mm
black luminance point

4-7. COLOUR REPRODUCTION ADJUSTMENT

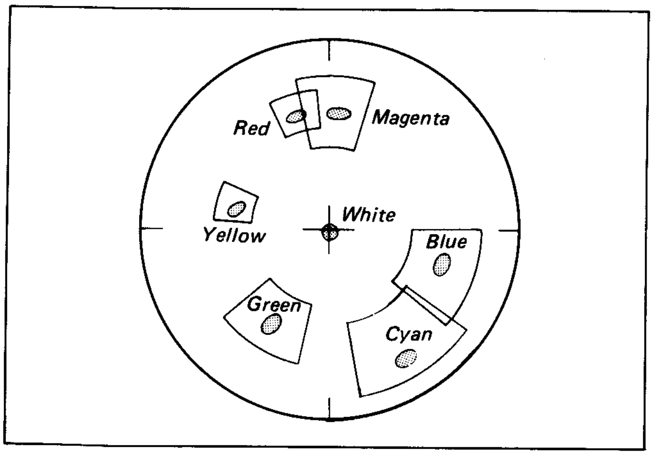
Equipment Required: Pattern box
Vectorscope

Subject: Colour bar as shown below.



Adjustment: Make the six colour luminance points enter the specification.

⊘ RV16/C-26 board; Chroma phase
⊘ RV14/C-26 board; Chroma level
⊘ RV21/C-26 board; Chroma phase
⊘ RV23/C-26 board; White balance (R-Y)
⊘ RV22/C-26 board; White balance (B-Y)
⊘ RV25/C-26 board; R-Y level

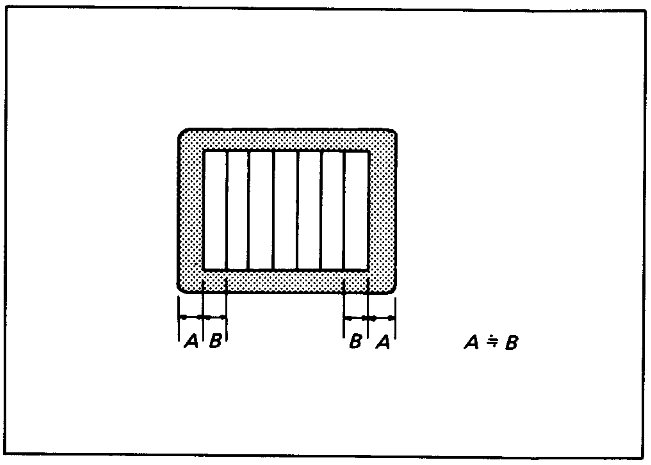


Specification: The white luminance point should be within 0.5 mm from the origin and the other points should be within the adjustment specifications.

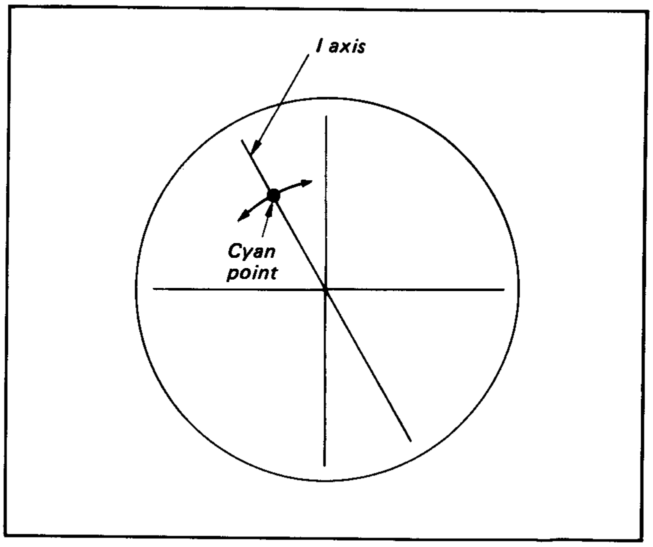
4-8. NEGATIVE HUE ADJUSTMENT

Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.



Adjustment Point: RV17/C-26 board
Place the Cyan point of the six colors on the I axis.

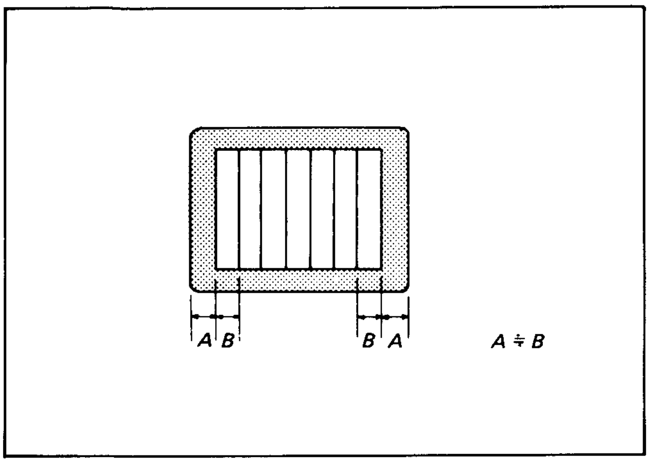


Specification: I axis ±5°

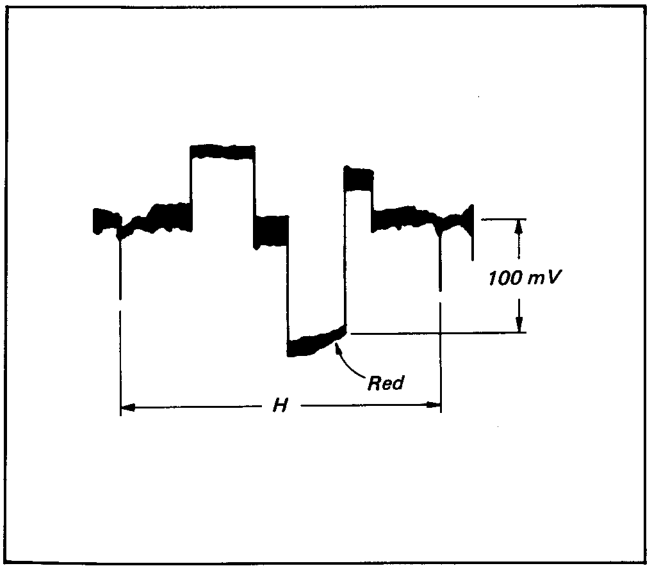
4-9. RED COMPENSATION LEVEL ADJUSTMENT

Equipment Required: Oscilloscope
Pattern box

Subject: Colour bar as shown below.



Adjustment Point: TP15/C-26 board
RV24/C-26 board



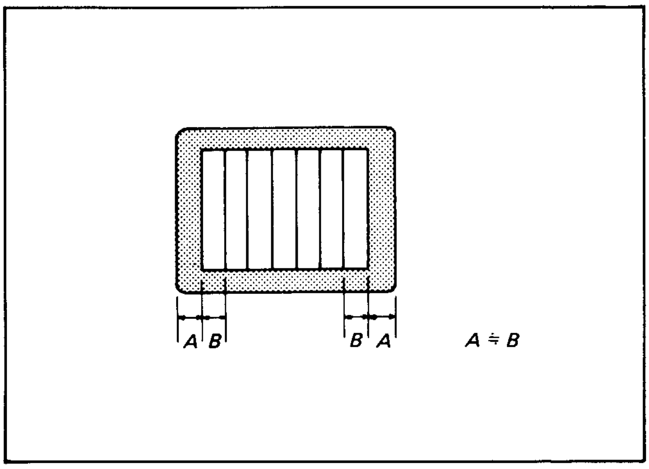
Specification: 100 mV

4-10. CHROMA NOISE CLIP ADJUSTMENT

Equipment Required: Oscilloscope
Pattern box

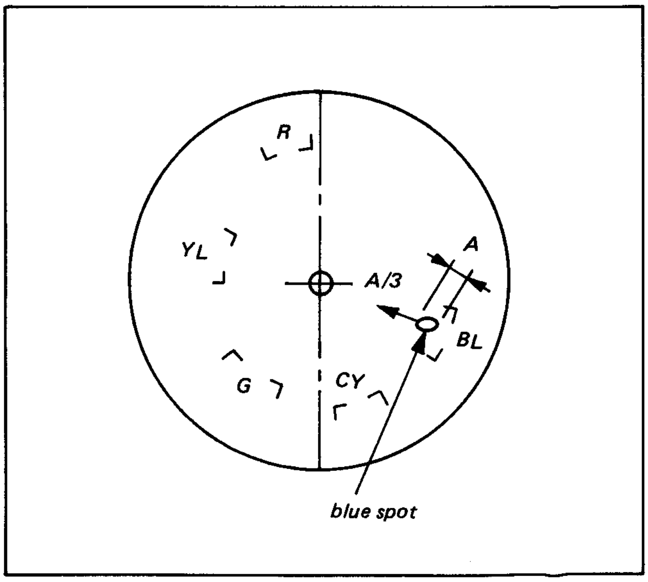
Subject: Colour bar as shown below.

Preparation: SENSITIVITY selector LOW



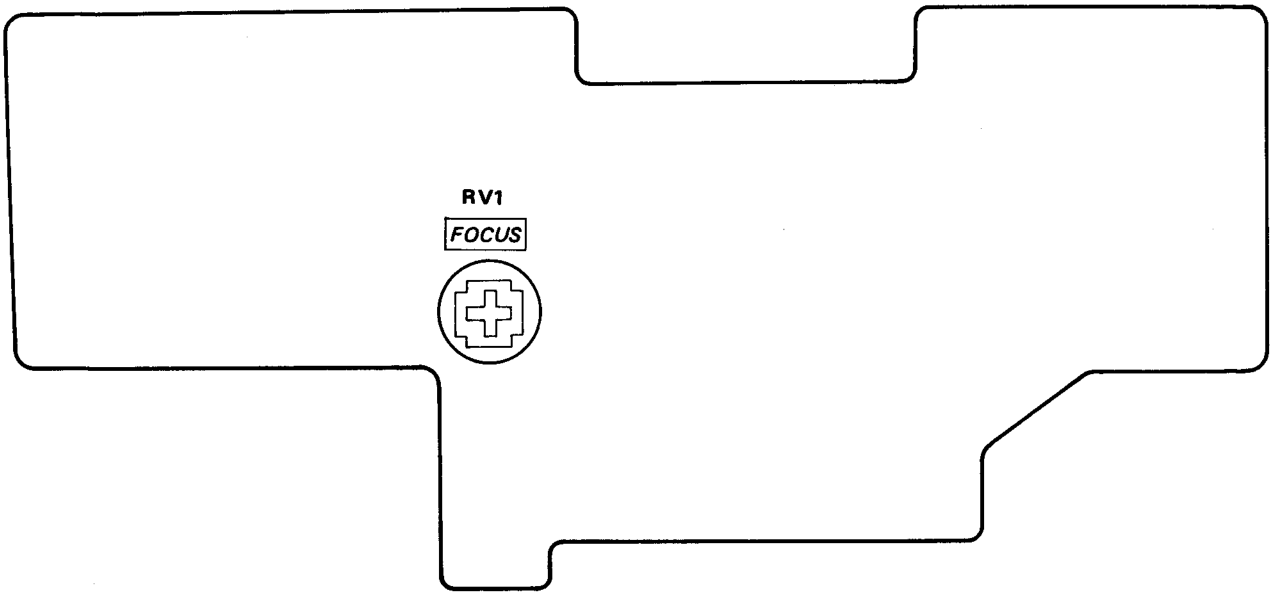
Adjustment Point: ⊘RV37/C-26 board

Turn RV37/C-26 board fully counterclockwise, turn it slowly clockwise, and then adjust it so that the blue spot moves toward the center of the vectorscope scale by 1/3 in length of the blue spot A.

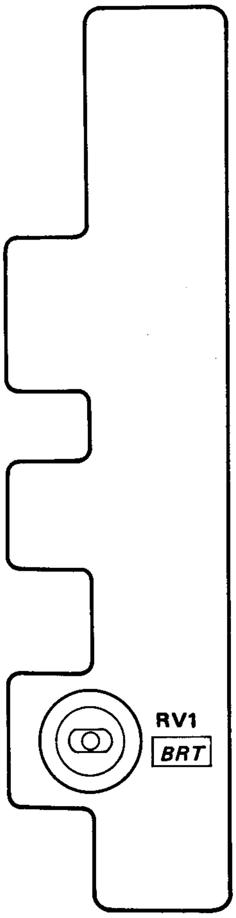


SECTION 5
ELECTRONIC VIEWFINDER ALIGNMENT

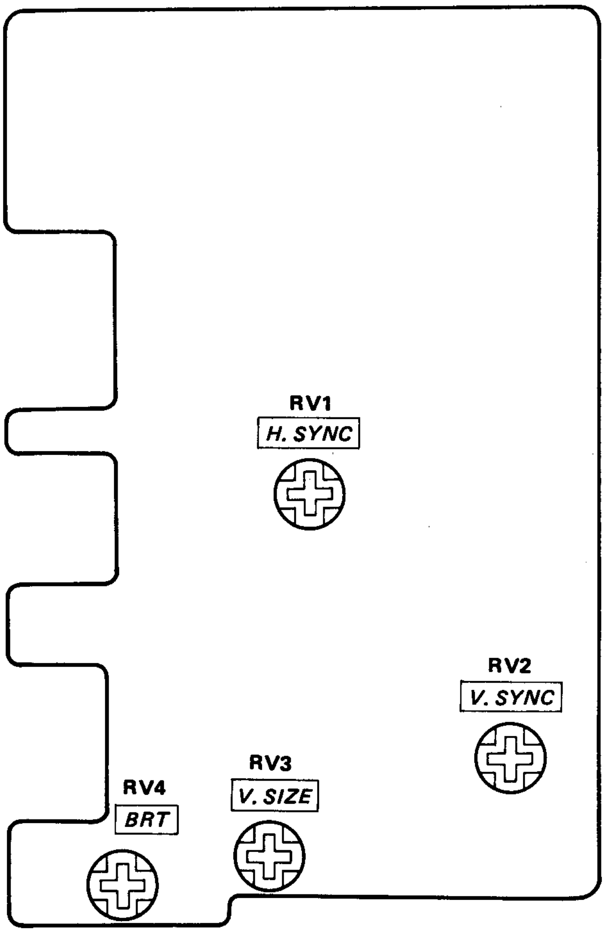
V-2 Board (component side)



V-1 Board (component side)



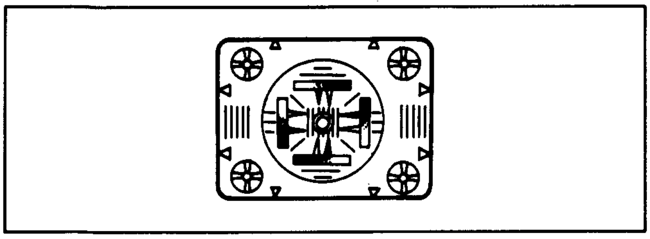
V-3 Board (component side)


RV1
H. SYNC
RV2
V. SYNC
RV3
V. SIZE
RV4
BRT

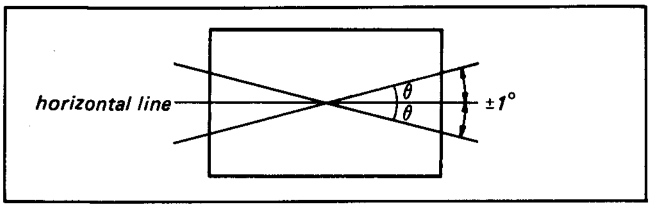
5-1. HORIZONTAL TILT ADJUSTMENT

Equipment Required: Pattern box

Subject: Shoot the resolution pattern as shown below.



Adjustment: Rotate the deflection coil while pushing it toward the fluorescent face and fix the coil so that the picture becomes horizontal. (Do not tighten it excessively.)

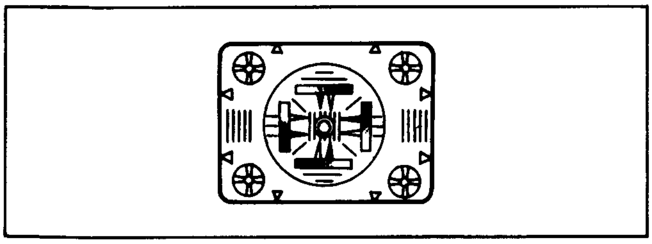


Specification: The picture should be within ± 1° against the horizontal line.

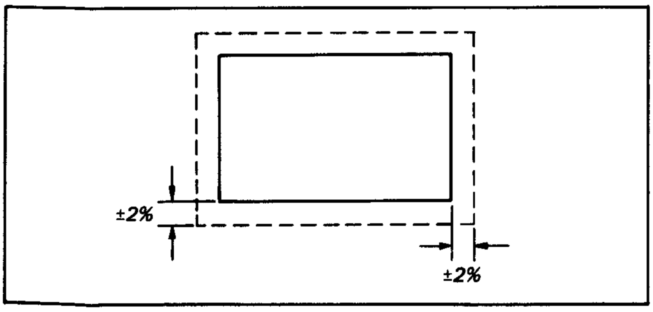
5-2. CENTERING ADJUSTMENT

Equipment Required: Pattern box

Subject: Shoot the resolution pattern shown below.



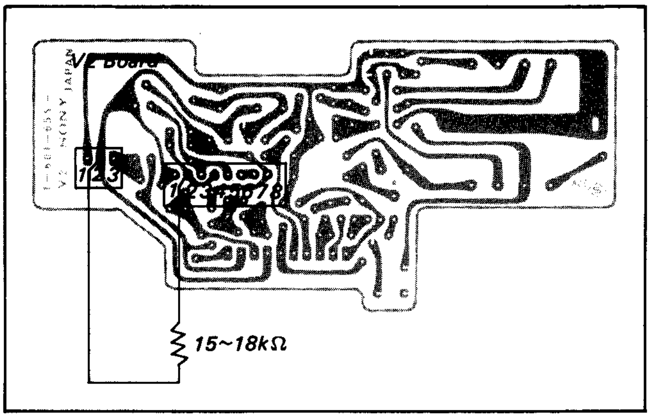
Adjustment: Adjust the centering magnet so that the top and bottom and the right and left of the picture become equal.



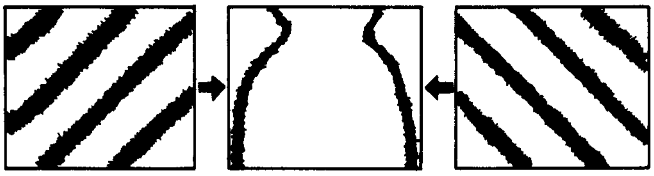
Specification: ± 2%

5-3. H. FREQUENCY ADJUSTMENT

Preparation: Connect a resistor (15 kΩ to 18 kΩ, 1/4 W) as shown below.



Adjustment: Adjust RV1 on the V-3 board so that the picture is as shown in Ⓑ.

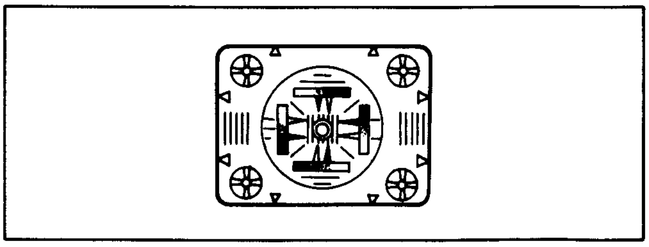


Ⓐ NG　　Ⓑ OK　　Ⓒ NG

5-4. FB PULSE WIDTH ADJUSTMENT

Equipment Required: Pattern box
Resolution chart

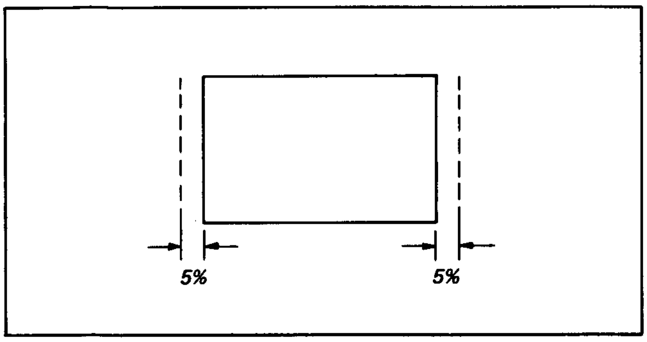
Subject: Shoot the resolution chart as shown below.



Adjustment: Select the value of C-7 for the overscan of 5 ± 2% H size and mount it on the printed circuit board.

0.001μF
0.0022μF
0.0033μF
0.0047μF
0.0056μF
0.0068μF
0.0082μF
0.01μF

- Mylar capacitor
- 100 WV

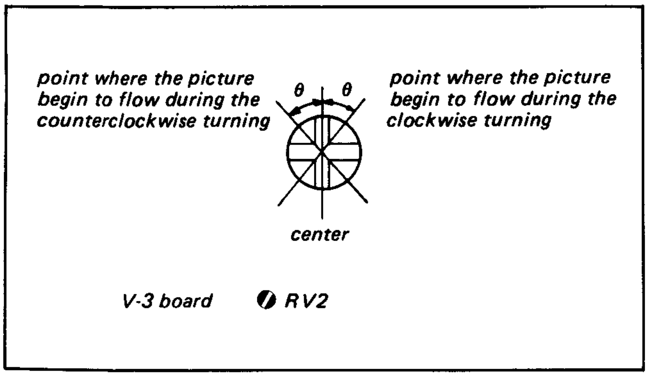


Specification: Overscan 5 ± 2%

Note: Since C7 is a component critical to safety, the specification should be satisfied without fail.

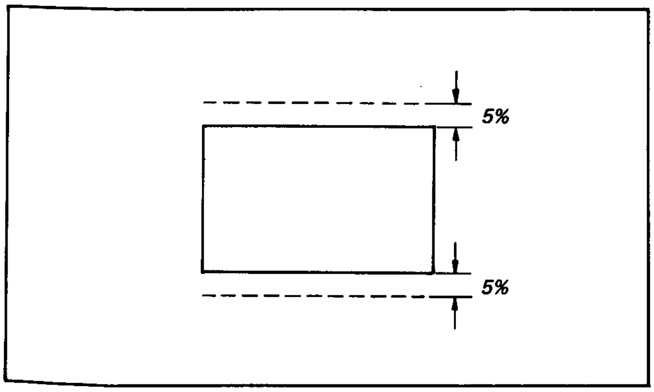
5-5. V. HOLD ADJUSTMENT

Adjustment: ⊘ RV2/V-3 board
Set the RV2 almost at the center between the points where the picture begins to flow during the counterclockwise turning of RV2 and during the clockwise turning.


point where the picture begin to flow during the counterclockwise turning
θ
θ
point where the picture begin to flow during the clockwise turning
center
V-3 board
⊘ RV2

5-6. V. SIZE ADJUSTMENT

Adjustment: ⊘ RV3/V-3 board
Adjust RV3 on the V-3 board so that the V size overscans 5 ± 2%.

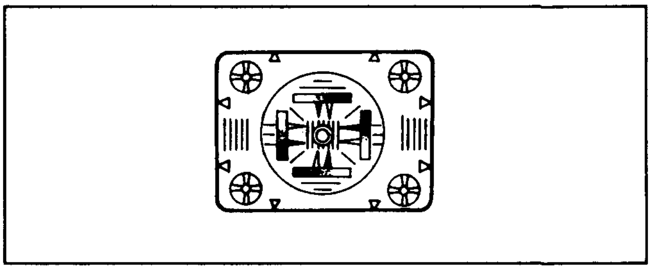


Specification: 5 ± 2%

5-7. FOCUS ADJUSTMENT

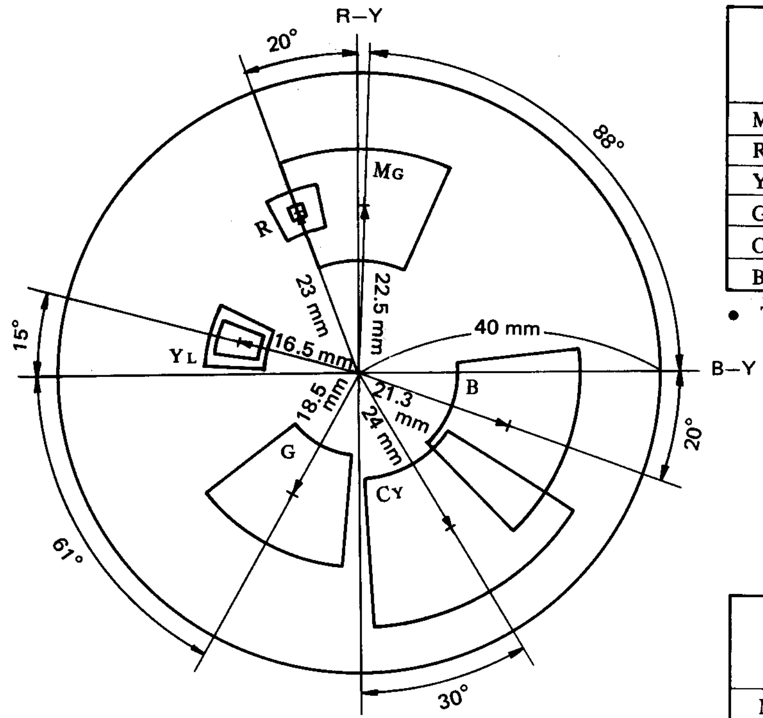
Equipment Required: Pattern box

Subject: Shoot the resolution pattern shown below.



Adjustment: ⊘ RV1/V-2 board
Adjust RV1 on the V-2 board so that the focus of the picture becomes sharp.

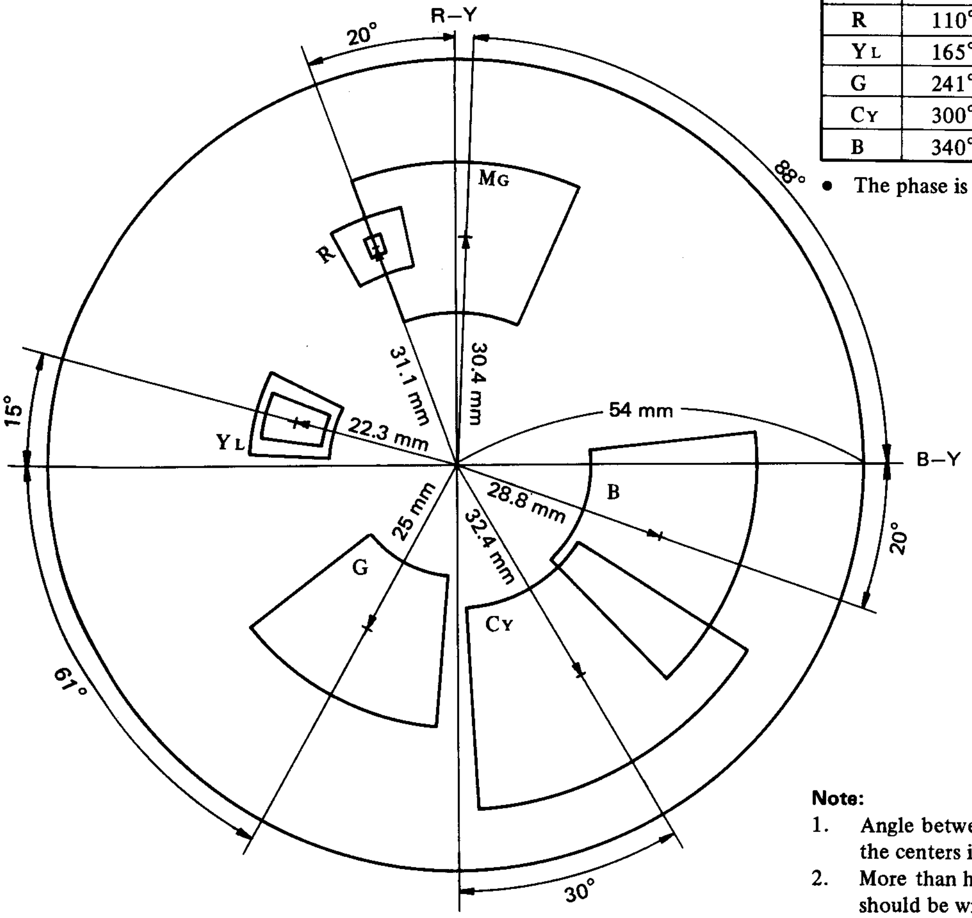
New Sheet (1981)


R–Y
20°
88°
MG
R
23 mm
22.5 mm
15°
YL
16.5 mm
40 mm
B–Y
B
21.3 mm
18.5 mm
24 mm
G
CY
20°
61°
30°

Radius 40 mm

	Center of Specification		Product Specification	
	Phase	Gain	Phase	Gain
MG	88°	22.5 mm	±22°	±7.5 mm
R	110°	23 mm	± 8°	± 3 mm
YL	165°	16.5 mm	±12°	± 4 mm
G	241°	18.5 mm	±23°	±7.5 mm
CY	300°	24 mm	±27°	± 10 mm
B	340°	21.3 mm	±26°	±8.3 mm

- The phase is the one when the B–Y axis is 0°.


R–Y
20°
88°
MG
R
31.1 mm
30.4 mm
15°
YL
22.3 mm
54 mm
B–Y
28.8 mm
B
25 mm
32.4 mm
20°
G
CY
61°
30°

Radius 54 mm

	Center of Specification		Product Specification	
	Phase	Gain	Phase	Gain
MG	88°	30.4 mm	±22°	±10.1 mm
R	110°	31.1 mm	± 8°	± 4.1 mm
YL	165°	22.3 mm	±12°	± 5.4 mm
G	241°	25 mm	±23°	±10.1 mm
CY	300°	32.4 mm	±27°	±13.5 mm
B	340°	28.8 mm	±26°	±11.2 mm

- The phase is the one when the B–Y axis is 0°.

Note:

1. Angle between Blue and Cyan. The angle between the centers is more than 10°.
2. More than half of the bright points of all the colors should be within the frame.
3. Position the Red and the Yellow spot inside the inner small frame as possible.